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BUENOS AYRES: A PROGRESSIVE SOUTH AMERICAN CITY

The Largest City of the Continent—Modern Civic Administration—Splendid Pavements—Extensive Electric Street Car Lines—Municipal Lighting Plants—Public Slaughter Houses

By Agustin P. Carbone, C. E.

BUENOS AYRES is one of the fifteen largest cities of the earth. Its present population numbers 835,878. It has an area of 71.81 square miles. It was founded in 1535 by Don Pedro de Mendoza. It is one of the most important municipalities in the Western Hemisphere, and metropolis of this Southern continent for many years to come While our city government is similar to that of the cities in the United States in many particulars, it does not wholly conform to the advanced systems of government in vogue in your country. We have

RESIDENCE OF THE NATIONAL GOVERNOR FRONTING ON THE PLAZA MAYO

the largest city in South America. A description of its municipal features will not fail to be of interest to our sister cities in North America. It is impossible in so brief an article to give a detailed account of its industries and characteristics. It is destined to be the several divisions which suit the convenience of our system of government, as follows: (1) The city is divided into twenty-four parishes, corresponding to your ward divisions, which bear the name of certain churches within their limits; (2) For another purpose the city is

divided into thirty-two police sections; (3) And it is again divided into fifteen sections, corresponding to the various offices in the civil registry.

THE FORM OF GOVERNMENT

Our city government consists of a Council and Executive Department. The Council is made up of two members elected from each of the parishes, making a total of forty-eight legislators. The members are elected for a term of two years, twenty-four being elected in alternate years, so that should new men be elected to office in any one year, the legislative body would not be without men of some experience. The service of the Council is gratuitous, but the office is one which is much sought after because of the honor associated with it. The functions of the Council are much the same as those of similar bodies in North American cities. While it makes the local laws or ordinances which govern the city, its various committees have much to do with the direction of the general administration of city affairs, the disbursements for construction, improvements and maintenance, as well as other local interests.

BUILDING OF THE MUNICIPAL GOVERNMENT

The chief executive of Buenos Ayres is known as the *Intendente* or Mayor, who is appointed by the President of the Republic, and his appointment is confirmed by Congress. This official holds office for two years. Our city was not incorporated as such until 1880, when Señor Torcuato de Alvear served as the first chief executive, being elected three successive terms. As a city we are indebted to him for many improvements, a fact which is universally acknowledged, and which has found graceful expression in the erection of a statue to his memory in the square which bears his name. Señor Adolfo Bullrich is our present Mayor who was re-elected last year and is now completing his second term. His administration of civic affairs has been very satisfactory.

SUCCESSFUL ADMINISTRATION OF BOARD OF PUBLIC WORKS

We have what is known in your country as a Board of Public Works, under whose supervision all construction and maintenance operations are conducted. Although we have not the complete home rule which we might desire, yet Congress does not interfere with us to any alarming extent. The Board of Public Works, therefore, projects and carries out its own ideas as to the improvements to be made in the city. One of the exceptions to this rule, however, is that in the conduct of the affairs of the Water Works and Sewerage Department the national government is practically held responsible.

Our building regulations place no restrictions upon architectural design. All that we seek to do is to carry out those ideas in the construction of public, commercial, manufacturing and private buildings, in such a manner as will conform to common sense, and promote the health — physical, mental and moral —of the community. We do not believe in the erection of tall buildings; most of those which have been built in the past two years have been only one story high; there are very few which exceed two stories in height. The architectural designs are characteristic of the country; there is too little variety. Of late years, however, the style of architecture has become more modern. The tall buildings are becoming more popular and a larger number of four or five story buildings have been erected within the past five years than during the previous history of the city. Most of these structures have been equipped with electric lights, gas, and modern heating and ventilating apparatus. According to the report of the Building Engineer, C. M. Morales, there have been 4,372 blocks of houses, making a total of 145,440 structures, since the 31st of December, 1880. From 1881 to 1888 the growth of the city was very rapid, but between the latter year and 1895 it diminished, beginning to increase again in 1896, when, through the subsequent two years, there was a building record of 27,945 structures, covering 72 square metres. In 1900 4,000 buildings of various descriptions, were erected within the city limits.

STREET PAVEMENTS

The subject of street improvement has not been considered until

within the last two decades, and most of the improvements have been made within the last ten years. The question of paving is one which occupied the earnest attention of the civic authorities for a long time. Many kinds of pavements have been tried, including those which are in use in the principal cities of Europe and America. In the choice of pavements, with few exceptions, it has been the endeavor of the authorities to adapt the pavement to our climate. The cost of construction and maintenance have also been considered. The most expensive pavements have been laid upon the streets having the heaviest traffic.

We still have some of the first pavement laid in Buenos Ayres. This consisted of stones irregularly laid over a layer of river sand. It is what would be called in your country a cobble-stone pavement with a sand basis. Not long after the introduction of this crude form of pavement upon those streets having a large amount of heavy traffic, we adopted what we call the "mixed system." It differed only from the former rough cobble-stone pavement in having one or two strips of road on each side called *"trotadores"* or trotters, that is to say, square stones laid a width of from 35 to 40 centimetres the entire length of the road way. These were intended for heavy wagon traffic.

The first modern pavements were laid in 1865 and 1866, which were followed two years later by the construction of several macadam streets. In 1888 we began to build for the first time, wooden pavements, and in 1893 we commenced the restoration of the old pavement, that is, the relaying of the first pavements of stone on a basis of concrete. At this time the developments of our city assumed such importance that the Common Council found it necessary to fix certain territorial limits, which was done by an ordinance passed in June, 1893. This ordinance included the dimensions and description of materials of pavements, the latter in regard to foundation, calling for Portland cement, crushed stone and silica, to be found within the city limits. In constructing the foundation for wood or asphalt pavement, Portland cement was designated as that which was best adapted to our needs. In the laying of the wood pavements the interstices between the blocks are filled in with a mixture of one cubic metre of sand to 450 kilograms of Portland cement.

The granite block, among other materials, has been used for certain pavements. We have adopted that which is known as the English paving block, which measures from 18 to 22 centimetres long, 8 to 10 centimetres wide, 15 to 18 centimetres high. This kind of pavement has been laid quite extensively in the central wards. For the more important streets a certain variety called "special-common," about 15 centimetres wide, is used. This stone is taken from the quarries in the country around Buenos Ayres, whence it is transported by railway.

WOODEN PAVEMENT BECOMES POPULAR

We have used wooden block with great success and some of our most beautiful streets are paved with this material. The accompanying illustrations will give your readers a fair idea of the excellencies of this form of pavement. We have used pine of several varieties, in its natural state, a portion of which has been treated with antiseptics and another portion untreated. The native hard woods, particularly algarrobo (ervum tetraspermum) have recently been employed in these cases.

THE NEW SLAUGHTER HOUSES

We have used some asphalt, laying it according to the Barber formula, and using what is known as Trinidad asphalt, but we have not met with success in the construction of this kind of pavement. It is expensive in first construction and for maintenance, besides being very slippery in rainy weather.

We have had better luck, so to speak, with asphalt paving blocks, which originated in North America, although we have only used this form of pavement on a few streets.

The general treatment of our streets, particularly the regulation of their width, has been a source of much contention and animated discussion on the part of our civic authorities. The old ordinances, those of 1895, provided that the width of the sidewalk shall be from 1.5 to 1.7 metres for streets 9.52 metres wide; 2.8 metres for streets 13.85 metres wide; 3.5 metres for streets 17.32 metres wide; 6 metres for those 26 metres wide. In all those streets of more than this width the sidewalk shall be in the proportion of 20 per cent. of the whole. When the position of the car lines is established the rest is an easy matter.

On the 1st of January, 1901, according to the record of the Board

of Public Works, there were 2,039,972.66 square metres of pavements of all kinds, as follows:

	sq. ms.
Granite block with concrete base	972,914.33
Wood block (algorrobo)	491,743.35
Asphalt (Trinidad)	101,595.93
Asphalt block	1,458.71
Sand with lime base	800.00
Dirt road	471,460.34

We have about 4,100 blocks of street paving, covering an area of 5,150,000 square metres, yet 6,350,000 square metres of pavement are needed in streets which are now open to traffic, and 4,800,000 square metres in streets already projected but not yet open to traffic.

TRAMWAYS OR STREET CAR LINES

Buenos Ayres has been called the city of tramways owing to the network of car lines which operate within the city limits. The first street car was installed in 1858 by Señor Lacroze with horses as motive power. In 1896 Señor C. Bright constructed the first electric line. At the present time 439 kilometres of tracks are used by companies now operating within the city limits, of which there are nine, with lines varying in length from 9 to 104 kilometres. Propositions have already been made by other companies for elevated and underground railways, to run from the heart of the city to the harbor in the suburbs. The proposition calling for the construction of an elevated road has been rejected as impracticable, but the construction work on the underground railway will shortly be commenced by Señor Carlos Bright. The electric system in use is that known as the overhead trolley. Very few accidents have occurred since the trolley lines began to be operated. The casualties in 1900 were diminished by 39 per cent. over those of 1899.

Contrary to the custom which prevails in North American cities, we believe that companies which obtain from our civil authorities valuable franchises should be made to pay for them. Among other valuable concessions which have been made to the city by the companies obtaining the right to construct, maintain and operate street car lines within the city limits, was that the entire line should be illuminated with incandescent lamps of two hundred candle power per kilometre. Besides several other important concessions which are made to the city government, the companies are obliged to equip their lines with the best cars obtainable, always looking out for the comfort of the passengers.

THE PUBLIC LIGHTING QUESTION

The first concession granted to any company for the illumination of our streets by means of gas, was given in 1854. Prior to this date kerosene lamps had been used, some of which are still in use in the outlying districts. What is known as The New Company of Buenos Ayres obtained its franchise in 1872 and others at later periods. There are three gas companies in existence, with a capacity of 37,517,681 cubic metres. The lamps average twenty candle power with an average pressure of thirty millimetres. The aggregate capitalization of these three companies amounts to 2,880,000 (pesos oro) gold dollars; the average price of gas per cubic metre is one-tenth of a gold dollar.

Electric lights did not come into public use until 1888. Then four companies sought and obtained contracts. These plants are equipped with a large amount of apparatus manufactured in the United States, by the General Electric Co. and the Western Electric Co. The combined capital of these four companies amounts to over 34,500,000 francs. The city has obliged the company to place all their lines underground, and the modern conduit has been employed for this purpose.

In addition to the work of these private companies the city has its own plants for the production of electrical energy, which is utilized in the illumination of certain parks, plazas, public squares, avenues, highways, etc., which is conducted on the same lines as are all establishments under the supervision of the administration.

The city plants in the harbor and Raichudo (port of the capital) supply much of the electric current used in the illumination in the municipal district. Arc lamps are also used in groups of two or three in the avenues, plazas and elsewhere, or are suspended by special cables between the buildings on the more important streets.

PUBLIC SLAUGHTER HOUSES

We have one municipal feature which we think is much in advance of the practice in the United States cities, and that is found in our public slaughter houses. We now have municipal slaughter houses of modern construction and equipment. These took the place of very primitive structures which supplied the public need in this direction for many years. We believe that after much study and investigation we have come to realize the importance of this work.

The old slaughter houses were situated in the southwestern part of the city, and the new slaughter houses, called "liners," are situated in the extreme western part of the city, almost on the line which separates this part of Buenos Ayres from the part known as "New Chicago."

The construction of the slaughter houses was begun in 1888 by a society which went by the name of New Chicago. The work made no progress, however, until 1896, when the municipality declared the expiration of the concession, and the land, plants and building, passed into the hands of the city, which paid a total of 700,000 pesos oro for them. The city has improved the plant in many ways which has increased the total cost of the slaughter house to 1,700,000 pesos oro. The accompanying illustration gives a fair idea of the new slaughter houses as they now stand.

The land inside the walls covers an area of 319,773.16 square metres and is in the form of a rectangle, which has a front of 346.6 metres on the northwest by 922.6 metres of front on the southeast, comprising forty-four stock yards for wholesale dealers and ninety-six for retailers. The area of each of the former is 1,400 square metres and of the latter 350 square metres, making a total accommodation for 30,000 head of cattle. The construction is of wood with an outer edge or wall of brick. The pens in which the cattle, sheep, and hogs are confined, are of a variety of stone peculiar to the country, covered with plaster. The greater part of the establishment is paved with asphalt, the remainder with granite covered with plaster. In the spacious interior, set aside for pens, is a machinery hall for the production of electric light, and the pumps for the two wells which supply water to the establishment, the apartments of the veterinary surgeons, butchers, etc.

There will shortly be crematory furnaces erected on the northwest side for the destruction of refuse and dead animals. The administration has special buildings for various purposes, having installed a school for the instruction of apprentices, shops, postal, telegraph and telephone companies, etc. Still further improvements are contemplated for the present year, and when completed it will form one of the most perfect institutions of its kind in the world.

The spirit which animates the majority of the citizens of this great city is progressive, and the probabilities are that modern improvements will be multipuled in all parts of the municipality during the next decade. Our authorities are doing what they can to improve local conditions by adopting some of the more advanced ideas found in the administration of civic affairs in Europe and the cities of the United States.

FRANCHISE SITUATION AND REFERENDUM IN CLEVELAND

Ohio Legislature Attacks Home Rule and Referendum—Assessment Equalization the First Step—A Unique Franchise—Can Make a Profit on Three-Cent Fare

By Professor Edward W. Bemis *

DURING the past year Cleveland has contributed some interesting and valuable chapters upon the franchise question, and even more important contributions are likely to appear in the near future.

With a majority hostile to the party in control in Cleveland and also hostile to advanced steps in the monopoly problem, the efforts of the delegation from the Cuyahoga County, backed up by the almost unanimous vote of the Cleveland City Council to secure the right of popular decision with regard to franchise questions, met with crushing defeat in the legislature this Spring. The final blow was delivered in defeating a proposed amendment to a bill which was passed taking away the control of Cleveland parks from the administration, and conferring the control upon a park board appointed by a county judge, of Republican politics. The amendment in question would have left to the voters of the City of Cleveland the final decision as to whether they preferred the new or the former method of park control. Just before this amendment, so apparently in accord with American traditions, was voted down by a strict party vote, a leader of the Senate had the assurance to make the following remarkable statement:

"I should hesitate to permit the people to vote on matters pertaining to the parks. The parks are a contribution from the rich to the poor. A contribution from the more intelligent to the less intelligent. They should not be controlled by those who have the political or business interests of the city on their hands. The parks should be controlled by the class which donated them."

LEGISLATION ATTACKS HOME RULE AND REFERENDUM

Last week the legislature followed up the attack upon the referendum and all home rule by lodging the local assessment of all property for taxation in the hands of a state board in any county where such information might be requested by the county auditor. It is well understood that this is to enable the defeated county auditor of Cuyahoga county, before he goes out of office, to throw all local assessments into the hands of this undemocratic body, to be appointed by the governor, attorney general and state auditor. But a reaction against this extreme legislation is sure to follow, and in fact there is evidence already at hand that the principle of the referendum and home rule has received fresh impetus from these very attacks.

The franchise question had already reached a critical stage at the time of Mayor Johnson's election in April, 1901. In fact the size of his majority was in part due to that question. The gas company had just secured a ten-year extension of its privileges under very suspicious circumstances, and the street railways had only been prevented from a still longer extension by reason of intense public indignation. In the course of two subsequent elections for the city council, which consists of one branch of twenty-two members, all but two of the "solid thirteen" that favored the worst of the franchise and other legislation of that time have been retired to private life.

The first effort of Mayor Johnson along franchise lines was to bring evidence before the local assessment board to show that the entire assessment upon the real estate and personal property of the street railway and lighting companies of the city was only about ten per cent. of the market value of their securities, or of the capitalization of their acknowledged net earnings at 5½ per cent., while other property in the city outside of the steam railroads, were assessed on the average at 40 per cent. to 60 per cent. of its true value. Yet a large portion of the latter was fiercely competitive, and was not possessed of special privileges in the streets. The hearings before this local board were sometimes sensational in the extreme. This was particularly the case when one of the gas companies which had been assessed on real estate and personal property at less than $1,400,000, was shown to have averaged dividends of

* A paper read at Boston, Mass., before the Eighth Annual Convention of the National Municipal League, May 8, 1902. Prof. Bemis is superintendent of the Cleveland Water Works.

ASSESSMENT EQUALIZATION THE FIRST STEP

8 per cent cash and over 5 per cent. in stock worth much over 200, and when it was further shown that this stock of a par value of $3,800,000 had all been accumulated, save the first $100,000 or less, out of earnings. The Mayor insisted that the stock was worth fully 250, and he would pay that much for it. One official of the company thereupon asked if the Mayor would agree in writing to buy 1,000 shares at that figure, and he at once agreed to sign such a contract for all that they would deliver up to 1,000 shares with three days; but not a share was produced!

Subsequently a state board of appraisers and assessors, recently dubbed the "Board of oppressors and assessors," sitting as a board of revision and consisting of the Governor, Attorney General and State Auditor, remitted all this additional assessment, of about $20,000,000 which was put upon the Cleveland monopolies by the local board, and thereby the city was deprived of over $450,000 of taxes upon which it relied for needed public improvements this year.

The action of the State board is being contested in the courts, and the State Legislature, as already mentioned, has guarded against any repetition of the increase of assessment of the street railways, or at least it thinks it has done so, by the creation of a State board appointed by this board of revision and serving for five years, one member going out of office, however, every year. The action is very generally denounced, and it is likely to bring a repeal of the law by the next legislature.

Following close upon this experiment still only just begun of raising as much of the public revenue as possible by taxing monopoly and privilege instead of private property in competitive business, came the grant of a street railway franchise under most novel conditions.

A UNIQUE FORM OF FRANCHISE

For the first time in the history of the country a street railway franchise has been granted for a straight 3-cent cash fare without tickets. It is an extensive system, which is expected to embrace seventy miles of streets in Cleveland, and its suburbs during the next four years, and as fast as consents from property owners can be obtained on the various streets. Already on several streets the requirement of the State law that calls for the consent of the owners of one-half of the abutting property on each street, so as to permit the immediate construction of several miles of double track has been met. A cash deposit of $50,000 is in the hands of the City to guarantee the good faith of the company, a few carloads of rails have already arrived, and men were beginning the work of laying the same in April, when a temporary injunction threw the matter into the courts. The franchise provides for full control by the City of the character of the service and for the right of the City to purchase the road at any time during the twenty years life of the franchise on paying the structural value of the plant plus 10 per cent. It is also provided that after ten years one-half of the net profits above 8 per cent. on the structural value shall go to the municipality. The provision on that point is carefully drawn:

"Whenever, after ten years from the date hereof, the net earnings of said company shall exceed 8 per centum per annum on the actual bona fide value of said road, equipment, extensions, etc., irrespective of the capitalization thereof, the owner shall pay one-half of said net earnings in excess of 8 per cent., whether said earnings are applied to interest payments, dividends, surplus, extensions or betterments, into the City Treasury, and for the purpose of ascertaining said value, the same procedure shall obtain as provided in section 17 hereof for purchase."

In order to reach important centers, advantage is taken of an Ohio law which allows a road to use the tracks and wires of an existing road to the extent of one-eighth of the mileage of the new company,

on payment to the old company of the cost of using its power and track, independent of any franchise. The new ordinance further provides that the new 3-cent fare road, known as the Peoples Street Railway, may build so-called straddle tracks on certain streets, i. e., it may lay its tracks a few inches from the rails of the old company, using the modern grooved girder rails, that do not interfere with the wheels of vehicles and bicycles. Advantage was also taken of the fact that in years past the City, in granting franchises, had wisely reserved the right to permit any new company to share the use of the tracks on certain streets without any reference to the above provision of one mile in eight. To the Peoples Railway, as it is called, has already been granted the use of five and one-half miles of such so-called "free territory," and some of its own original grant is made free territory.

CAN MAKE A PROFIT ON THREE-CENT FARES

Nearly all street railway men claim that it is impossible to earn any profit and proper depreciation charges with three-cent fares, but the inside facts of Detroit's experience, when Mayor Johnson was president of the road in 1899-1890, and the experiences in reducing fares in Toronto and some other places, indicate that in our larger cities three-cent fares are likely to so increase profitable short-distance traffic as to return a good profit on the actual investment of the plant, where a further investment in city councils and in the manufacturing of public opinions is not also necessary. The existing Cleveland railways are fighting the three-cent fare road as if they feared that after all it will be a financial success.

The franchise was granted differently from any other known to the writer in this country. Instead of a company coming forward and seeking a franchise, making out its route and seeking to impose its own terms upon the city, the City itself took the initiative, before any company had appeared, selected the route, draughted the ordinance, and called for bids, the company giving the lowest rate of fare to be given the preference.

There was, however, but one bid, and no terms were offered more advantageous than those incorporated in the ordinance above described. The new company was organized by Mr. John Hoefgen, formerly connected with Mr. Tom L. Johnson's street railway enterprises in Brooklyn and elsewhere, and later a successful financier and manager of railroad enterprises on his own account in Pennsylvania and other parts of the country.

There was much opposition in the Council, but the general demand of the voters for three-cent fares and municipal ownership and the influence of the Mayor in the same direction were so great that the opposition at critical periods dwindled away to a small minority.

The two old companies, by financial inducements and in other ways, tried to get the owners of abutting property to withhold their consents, or to withdraw them after they were given. These efforts culminated in the temporary defeat of the People's Company, which could not secure, or at least could not retain, the necessary number of consents on two important streets. It so happened, however, that these streets were in reality only portions of one long street, which went under four different names in four different sections. The Mayor, therefore, introduced an ordinance consolidating the four streets into one, for on the one long street it was believed impossible for the old companies to buy off a sufficient number of property owners. After a sensational fight this union of streets was accomplished.

THE OLD COMPANIES OBJECT

The two old companies are still attempting legal obstruction, but the new road seems assured. Fortunately there were a large number of streets in this rapidly growing city of over 400,000 inhabitants, that were deficient in street railway facilities, when this three-cent road was proposed. The old companies also had lost popular support by reason of a big strike upon one of them two years ago, and because of the methods they had taken to secure extensions of franchises during the few months preceding the election of the present Mayor, as already indicated. Some of these franchises expire within three years and most of the others a few years later. This new road will probably force the others to come to a three-cent fare sooner or later, and anyway will furnish a means by which the city can enter upon street railway operation of the new company at any time, and thus be in a position to take over the old roads as fast as the franchises upon them expire, if meantime the legislature can be induced to insert the right of municipal ownership of street railways in the city charter.

The existing railway companies of Cleveland, acting nominally through a taxpayer, are now endeavoring to show defects in the franchise granted to the new company. The chief of these defects is said to be that the route finally described and granted by the Council differs in a few places from the exact route described in the formal advertisement of the Council for bids. It is not asserted that the new streets are any more valuable for street railway purposes than the others, the real reason for the change having been the inability to secure consents on two or three short streets in the face of the offers of the existing roads. The attorneys of the City do not believe that any permanent obstacle can be placed in the way of the three-cent fare road, but serious delays are possible. The great point gained, however, is that the people now realize the possibility of getting three-cent fares, and they know who are responsible for delays. On May 6 the temporary injunction was dissolved, but the existing companies are likely to continue their legal fight before other courts.

THE MAYOR ADVANCES A STEP

On May 2d a resolution was introduced by the Mayor at the meeting of the Board of Control, and was unanimously adapted. It takes the first steps for advertising for bidders offering the lowest rates of fare on seven miles of the most valuable routes of the two old companies whose franchises expire, according to the city's claims, in 1904 and 1905. The reason given in the resolution for thus taking up the matter two and a half years before the expiration of the franchise grants, was that it would necessarily take much time in granting the franchise, "safeguarding the property rights of the present owners, and providing for the acquisition of the present property in case the owners are not the successful bidders," and also that "there should be secured from the patrons of these lines immediately on the expiration of the present grants, the lowest fare obtainable by competitive biddings." The Mayor further publicly declared, as an additional reason for present action:

"The legislature has not adjourned yet, and I want to serve due notice on the old companies of how we shall proceed. This will give them a chance to go to the legislature and pass some more rippers. They may be able to get a bill through the legislature to take the franchise-giving right away from the city council and give it to the governor, board of remission, or some board of this nature. The people are not to be trusted in such matters, you know, and our Republican legislature may decide that the right to give away the people's rights should be placed in the hands of good, true, honest men who can be trusted."

It is coming more and more to be recognized in Cleveland that the street railway agitation will grow hotter and hotter, until not only three-cent fares are secured on all the roads, but until the city has the right from the legislature and from contracts with the companies, to purchase the property of the latter at a moderate advance over its structural value. This agitation will be studied with great interest in the light of the recent vote in Chicago, of over 5 to 1, in favor of public ownership of all the city monopolies, and in the light of the probability that as soon as the people can secure the opportunity to express themselves in effective legislation on the subjects in all our large cities, reductions in charge under private management and preparations for public ownership and operation in the near future will become the order of the day.

ROAD IMPROVEMENT IN NEW JERSEY

New Jersey the Pioneer in Road Improvement—Increasing Demand for Better Roads—Raises Land Values—State Aid an Essential Factor—Excellent Methods in Vogue in France—Great Benefits from Broad Tires

By Henry I. Budd *

THE State of New Jersey has been the leader in the good roads movement in this country. Since its inauguration the work of road building has proceeded with uninterrupted success. About one hundred and ten miles of roads were constructed last year at a cost of nearly half a million dollars. The work was performed under the provisions of the State Aid plan. Nearly double the sum expended last year will be devoted to the improvement of the highways the present season and nearly two hundred miles of improved road will be built.

AN UNIMPROVED JERSEY SAND ROAD

THE DEMAND FOR GOOD ROADS INCREASING

The demand for good roads is constantly increasing. Many more miles could be added to our annual list were the appropriations large enough. The ability to construct with rapidity has been much lessened this year by climate influences. Our contractors lost nearly two months by insects, the excessive rains, an intensely hot period, and the diseases of horses common to the unusually wet weather that prevailed during the first and best part of the building season. Although the fall has been unusually fine, the returns from finished work were late for our general summary of cost, and the different causes mentioned prevented several roads from being finished in time to receive the benefit of this year's appropriation.

The great number of roads applied for in the different counties of the State, and the intense desire of many to have them immediately improved, so that the present generation can reap the advantages thereof, makes it quite embarrassing, with the limited means at our disposal, to be unable to supply the necessary funds. This leads us to the point that only by increased State appropriation can we, in a measure, satisfy the great demands of our people. An additional appropriation of $150,000 would be none to much to make the working of the State Aid law easy, and to facilitate the improvement as rapidly as the larger portion of our citizens desire. Not only this, but the law should be amended so that counties, if they so desire, could expend one-half of one per cent. for road improvements, instead of one-fourth as the law now allows.

* State Commissioner of Public Roads of New Jersey.

A MEANS OF INCREASING FARM VALUES

The necessities of some counties are so great, especially agricultural ones, that the inhabitants of those counties are fighting like hungry wolves each to have their roads first improved. In no way can the State add to its wealth more rapidly than by giving of its surplus to the hardening of its roadbeds. By this process so many millons of dollars would be added to the wealth of the State that, if the present sources of State revenue should by any means cease and the State thereby be forced to impose a direct tax, property values would be so increased that the taxes would rest but lightly upon its inhabitants. During the past year the taxable value of the State has increased more than twenty-seven millions of dollars, and although this is not all attributable to good roads, yet a large part of it is, for most of the added wealth and population settles in greatest volume along the improved roads. Much of the immense wealth in the cities near us is rapidly moving into our State, and permanently remaining wherever the roads present similar conditions to the streets of the cities.

In our travels around the State we often hear expressions made by men of liberal means, dwelling during the summer in many portions of our State, that if their neighborhoods would have roads such as they could pleasantly travel over all winter, they would spend the fall and most of the winter months at their country homes. Their constant affirmation is that if they could travel to lectures, schools, churches and trading centers through the winter, over hard, smooth highways, the city would have but little attraction for them.

They would no longer be cooped up in narrow streets and closely crowded houses, where comfort only is attained, but would reside where wide spreading landscapes and plenty of fresh air give opportunity for health and strength not afforded in populous cities.

There are several localities in our State where the improvement of the common roads has been instrumental in increasing and attracting to each from one to three or four millions of wealth during the few years we have been engaged in this work. In no State in the Union can road improvement add so largely to the population as in New Jersey, for the largest part of our territory is situated within short

AN IMPROVED ROAD—FOUR INCHES IRON ORE AND FOUR INCHES TRAP ROCK

distances of the greatest cities in the Union. Our State, in all parts, has frequent and rapid communication with them by steam roads, while trolley lines are being projected and built in all directions. Now if our common roads are rapidly improved, our population will be increased beyond the calculation of the most optimistic, and much wealth will be added to our State.

STATE AID AN ESSENTIAL FEATURE

In all great systems of road building the States have been the foster fathers. Darius the great ruler of the Persian empire, connected the eastern and western frontiers of his empire, twenty-seven hundred miles apart, with such a splendid system of military roads that couriers could make the whole distance in ten days when common roads would require many months. The great empire of Alexander was made possible through these roads which he carefully managed to keep in the same condition. The great highways of the Romans, numbering many thousands of miles, many of which have endured for ages, were the strongest bonds in the development and maintenance of their empire. The improved roads of England, France, Germany and other States in Europe were largely the creation of their respective governments and are still fostered and maintained by the same agencies. So in this country experience proves that the construction and maintenance of good roads, by the appropriation of public funds for that purpose, have been eminently successful. The people realize the advantage they gain from these undertakings, and are more than willing to pay the taxes necessary to meet the bounties of the different States. They find their return in reduced cost of transportation, easy traveling, business facilitated, free rural postal delivery made practical, the value of land increased, the attendance of the school and church noticeably enlarged and the rural communities elevated to a higher level in the scale of civilization.

Americans make the mistake in road building of studying the question solely from a physical and constructive standpoint rather than from one of organization and systematic operation. Where we have bad roads we are disposed to criticise them from a constructive standpoint. If a road fails, we say that it is because it is not well built; because the right material was not used. In this our view is superficial. Organization, system, constant and uninterrupted care, a vigilant road patrol are required for the purpose of immediately detecting and remedying the slightest defect. The *cheapest way to care for a road is by never allowing it to get into a bad condition;* by never allowing it to deteriorate in the least. A road *properly cared for gets better every year.* It improves constantly. This is the way to make a road. The most systematic, the most economical, the most painstaking road builders are the French. They have better roads, at a less cost, than any other nation. Their results are ideal both from the standpoint of cost and the character of the roads. They are a people heavily burdened with taxation. With them economy is necessary; it is the saving born of necessity. It is the kind of economy that, among other things, develops the perfect roadway.

AN EIGHT-INCH MACADAM ROAD

ONE OF THE BAD SEASHORE ROADS OF NEW JERSEY

CONSTANT CARE NECESSARY TO BETTER HIGHWAYS

What is its method? Constant and systematic inspection and care. "Memorandum for the Road Viewer," is a book of about two hundred and fifty pages, and contains detailed instruction for the care of roadways in France. It provides for a regular and systematic patrol of the roads and works connected therewith, viz., bridges, culverts, ditches, drains and their dependencies. In France most of the roads have been made of macadam, though many are of cobblestones, particularly in the northern part of France.

In the south most of the roads are macadam, and are altogether pleasanter and more satisfactory for general travel. During all the time of their existence they have been subject to constant inspection and repair as soon as the slightest defect has shown itself. *One man with a horse and cart can care for many miles of roadway when he has nothing else to do, and when he undertakes the work before the imperfection is great.* When we wait for our roadways to be cut to pieces, to reach an almost impassable stage before we do anything for them, the work of repair is laborious and expensive. With constant inspection there is required only a few shovelfuls of broken stone for each little defect. In France all roads are again subject to the general inspection of a general road officer, who holds his subordinates responsible for results, and makes reports upon the improvement of bridges, drainage and affairs of this character. Any defect, of however slight a character, in any roadway comes about through some one's neglect. Through the perfection of the organization in France it is entirely possible to place the responsibility. For this reason, neglect of duty is a rare occurrence.

IDEAL RESORTS IN FRANCE

The French macadam roads, roads made of broken stone, are of the ideal character, smooth, reasonably permanent and best suited to the comfort of the horses and animals which travel over them. A macadam roadway is in every way ideal when we consider it with respect to the comfort of those who travel over it. It is even

a question in the minds of many engineers if a macadam roadway is not superior in all ways to asphalt, wooden-block, stone-block, or other artificial street coverings.

A chief engineer is at the head of each department, and he has several assistant engineers, each in charge of a subdivision called an arrondissement. All the roads in these arrondissements are visited and examined by them at least quarterly, and oftener if necessary. These engineers in turn have lieutenants, called conductors, who oversee certain lengths of road, which they must look over in detail at least semi-monthly. Under the conductors come the cantonniers, who do the manual labor, each one caring for a canton, or a stretch about two miles long. Five or six cantons are grouped together and their cantonniers form a brigade one of whom is made chief, and has a shorter stretch to care for in order that he may oversee the others. If a piece of road absolutely requires it, one or more laborers, called auxiliaries, are given a cantonnier to aid him.

Besides overseeing their roads the conductors give all orders to the chief cantonniers, examine their work and report on their conduct and make written reports to the engineers twice each month. They keep the accounts of their divisions and report on petitions or new projects. They are obliged to do all their traveling on foot, examine into the smallest details and give the necessary explanations and directions to the cantonniers.

METHODS USED IN EUROPE

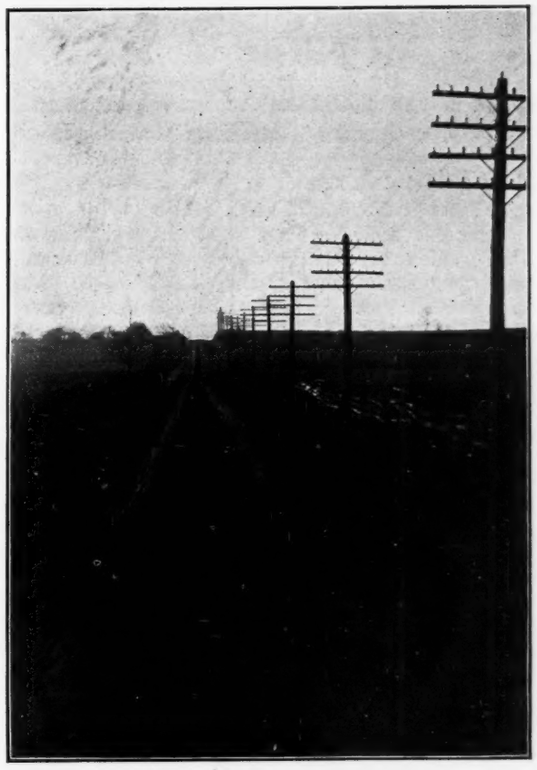
The canton of the chief cantonnier must be the best kept of the brigade, in order to show his superiority over the other men. These men are nominated by the prefect of the department according to certain conditions: They must be between twenty-one and forty years old, suffer from no infirmity that interferes with daily labor; have previous experience in workshops appertaining to their work or have worked on the roads in some capacity; possess a certificate of good conduct, and be able to read and write.

The cantonniers must remain on the roads from sunrise to sundown in winter, and from 5 A. M. to 7 P. M. in summer. They are allowed to build shelters or have movable shelters in which they can seek refuge during storms, but they cannot absent themselves from the roads. Each one has an account-book and a register, and keeps a daily account of his work and the time occupied in each task. At the end of each month the conductor recapitulates the account and sends it to the engineer.

In this way the roads are never without the most careful attention, and expensive and annoying repairs are rendered unnecessary.

BROAD TIRES MAKE GOOD ROADS

We may expend millions of dollars to improve our roads, but unless we can secure the enactment of laws which will enable us to maintain them at the least possible expense, and unless we can secure



A FINISHED TURNPIKE IN WARREN COUNTY

the passage of a bill providing for the compulsory use of broad tires, much of the public money will be wasted, for the prevailing use of the narrow tire damages our highways to the extent of tens of thousands of dollars every year despite the fact that careful attention is given to the maintenance of the roads. The only law which we have at present which attempts to remedy the evil done by narrow tires, is a general act which provides that any township within the State is authorized to encourage the use of broad tires by allowing a rebatement of taxes to those farmers and truckmen who use broad tires on their wagons and carts. In order to avail itself of this act, it is necessary for the township committee to pass an ordinance allowing a rebate of taxes for township or road purposes to all owners or possessors of wagons or carts used in said township for transportation of goods, wares, merchandise, produce, passengers, and for general farm, freight and express purposes, having tires of not less than four inches in width provided the said rebate shall not exceed one dollar for each wheel in use in any one year. Although this act went into effect in 1896, only a few townships have taken advantage of its conditions. The only way to bring about a reform in this direction will be for the State to pass a general law compelling the use of broad tires. Until such a law is passed we can not expect to obtain all the benefits of our money expended for the construction of good roads.

A GRAVEL ROAD IN GLOUCESTER COUNTY

The people of New Jersey are thoroughly determined that all parts of her domain shall be covered with good roads. By no means can the State add more rapidly to her wealth than by employing her bounty to tempt her citizens to contribute to their surplus to jointly improve her highways.

As a beautiful stream flows steadily onward, gathering volume in its course, until it carries the commerce of a nation, so the work of road building in New Jersey proceeds ever forward towards its goal—the improvement of the leading highways of the State—until the commodities of a commonwealth move with little friction into the finest markets of the world.

MUNICIPAL SOCIALISM IN GREAT BRITAIN

Investments in Public Utilities Amount to $1,500,000,000—Practically No Limit to Municipal Ventures—Liverpool Has Civic Schemes—Tenements Owned and Operated by Cities—A Valuable Review of the Situation

By James Boyle *

For some years past, there has been a quiet but gradually increasing development of a certain phase of socialism in Great Britain. Reference is made to what is generally known as "municipal trading" and sometimes, and more correctly, as "municipal socialism." The first appellation is rather a misnomer at the existing stage of the movement. Municipal socialism does not mean a division of private wealth or property "share and share alike," but the ownership and operation of certain undertakings and enterprises (in America generally described as "public utilities") by the municipality for the public good, as claimed. As generally explained, the enterprises within the proper sphere of municipal socialism are "public necessities." But here arises the question, Where is the line to be drawn? This line is by the great majority of advocates of the system drawn at those enterprises and undertakings which by their very nature are essentially public or semi-public in their functions, and which are of necessity more or less monopolies—as, for instance, street railways, waterworks, gas lighting, electric lighting, and electric power. Incidentally, it may be mentioned that the domain of "national socialism" has been entered into by the British Government by its ownership of the telegraph system and by its proposed gradual absorption of the telephone system; and a movement has sprung up for the nationalization of the railroads, and even of the coal supply, as well as of storage of wheat for use in case of war.

MUNICIPAL UNDERTAKINGS AND CAPITAL INVESTED

In 1875, the capital invested in municipal undertakings in Great Britain was $465,000,000, while in 1900 there were $1,500,000,000 invested.

There are now in Great Britain 931 municipalities owning waterworks; 99 owning the street railroads (or "tramways," as they are called here); 240 owning the gas works; and 181 supplying electricity. Most of these are in England. Municipalities were not allowed to work the tramways until 1896. It is estimated that half of the gas users in England use municipal gas. In a number of places—Liverpool among them—the municipalities supply electricity for lighting and power, while the gas supply is still in the hands of private corporations. In the case of Liverpool, the gas company is quite willing to sell to the municipality, but the latter will not buy; first, because under the charter of the gas company the municipality would be compelled to pay a perpetual dividend of 10 per cent. to the stockholders, and, secondly, because it is believed that in the near future electricity will practically supersede gas as an illuminant.

GREAT VARIETY OF CIVIC VENTURES

The municipalities of Leamington and Harrogate own Turkish baths, two of the best at present existing in Great Britain, and Harrogate also gives fireworks displays at municipal cost. Glasgow, like Liverpool, owns its waterworks and trams, and provides municipal lectures. Glasgow has quite recently reduced the fares on the tram cars, so that there are now not only half-penny (1 cent) fares, but a distance of 2½ miles can be traveled for 2 cents. Universal penny (2-cent) fares will probably shortly be introduced in Liverpool. The "transfer" system, as prevailing in America, is not used in Liverpool, nor in any other British municipality, so far as I know. Glasgow was the first city to establish a "municipal palace." Manchester owns shares in its ship canal. Out of its municipal tramway profits, Sheffield has appropriated $75,000 for the erection of shops and business premises, which it will rent. Quite recently, the northern townships outside of London bought the well-known Alexandra Palace, where the municipal authorities maintain an auditorium and give organ recitals and theatrical, military band, and variety entertainments of all sorts, and industrial exhibitions. Torquay owns a rabbit warren; Colchester possesses an oyster fishery; St. Helen's (a chemical center in this consular district) supplies sterilized milk; Hull owns a crematorium; Doncaster and Chester own race courses (the former actually managing the races); Bournemouth owns one of the finest golf courses in Great Britain; West Ham, a borough of London, owns a stone-flag factory; and Bradford owns a hotel—as also does Liverpool (on its waterworks property in Wales).

MUNICIPAL DOCKS

Bristol has municipalized its docks and harbor, at a cost of between $10,000,000 and $15,000,000. The docks of Liverpool are municipalized in a modified way. The system is peculiar to Liverpool. This vast estate, valued at several hundreds of millions of dollars, is administered by a public trust, nearly all the members of which are elected by those who pay dock dues, and the profits, after deducting expenses and payment of interest on capital account, go to improvement, and not to the benefit of a private corporation. The probability is that the London docks will before many years be managed under either the Bristol or the Liverpool plan. Nottingham, in addition to owning parks, markets, artisan dwellings, baths, and a hospital, has bought a castle and a forest, and has a natural-history museum and a school of art, and was the first municipality in Great Britain to have a university college. The last item gives occasion for the statement that several English cities have within the last year or so taken up the question of local universities. Birmingham has established one, and Liverpool will shortly follow suit.

LIVERPOOL OWNS ALL PUBLIC UTILITIES

Liverpool is one of the foremost cities in municipal socialism. It owns the waterworks (one of the best systems in the world); it operates the street cars; it supplies the electric light and power; it has one of the largest and best public-bath systems anywhere and proposes to erect the finest Turkish bath in Europe; it provides public laundries for the poor districts; it furnishes flowers and plants for the windows in the slums; it sells sterilized humanized milk for the children of the poor at cost price; it has a salaried organist to play its famous municipal organ; it gives municipal lectures—and all these in addition to the usual undertakings of municipalities, such as parks with concerts, technical schools, etc. But the greatest socialistic undertaking by the Liverpool municipality is that of providing dwellings for the very poor, the dispossessed tenants of demolished insanitary dwellings of the slums.

The one great predominating question in connection with municipal socialism is the "housing question"—that is, the demolition of "slums" and insanitary dwellings and the erection by the municipality of suitable dwellings in place thereof. Americans who have never been here can have but little conception of the terrible conditions existing in many of the large cities of Great Britain as to the housing of the very poor. This condition is a heritage of former social and economic conditions, as well as of feudal land laws, and of the past indifference both of the municipalities and of Parliament, as well as of the public generally—even, it may be said, of philanthropists. But heroic efforts are now being made in many of the large cities, and Liverpool is in the front rank in the efforts to remedy this deplorable condition of affairs. Many difficulties have been confronted and overcome which at first were thought to be insurmountable—and these in addition to the perplexing moral and social questions involved. One great difficulty is that of compensation to the owners of insanitary property. In England, the doctrine of "vested rights" is generally held very tenaciously. London has spent nearly $15,000,000 in clearing away insanitary property. In some districts of London, it has cost from $1,500 to $2,500 for every family turned out. These large sums refer only to the clearances of the slums and to the compensation of the landlords, and do not include the amounts spent on the construction of new municipal houses. An agitation is being raised against the past generous compensation of owners of insanitary property, and it is claimed that under the present act of Parliament these

* United States Consul to Liverpool, Eng., in Consular Reports to the Department of State, Washington, D. C., and sent to THE MUNICIPAL JOURNAL for publication by the Bureau of Foreign Commerce.

owners can be prosecuted for allowing their property to become insanitary.

MUNICIPAL HOUSING SCHEMES

Another great difficulty has been the question of providing an adequate number of suitable municipal dwellings ready for occupancy at the same time that the unfortunate dwellers of the slum houses are dispossessed of their tenancy. Inattention to this necessity has called forth indignant protests in the large cities of Great Britain where the municipal scheme has been adopted as a solution of the slum problem. Glasgow, for instance, is said to have had at one time 50,000 people turned out of their homes by the corporation (of course, not all together), while it only provided housing accommodation for 7,000. In the initial stages of the municipal housing scheme in Liverpool, the same difficulty presented itself, but the "housing committee" of the corporation have recently pledged themselves that they will not undertake any scheme of demolition until they have provided adequate accommodation elsewhere for the dispossessed tenants. Under the present act, municipalities are compelled to provide substitute accommodation for at least 50 per cent. of the dispossessed occupiers of slum property. The act under which municipalities demolish insanitary areas and erect dwelling houses seems to be of a most comprehensive character. It not only authorizes a municipality to construct a house, but it "may include a garden of not more than half an acre, provided that the estimated annual value of such garden shall not exceed £3" (say $15). And the municipality, if it builds a cottage, can "fit up, furnish, and supply the same with all requisite furniture, fittings, and conveniences."

HOW LIVERPOOL DROVE OUT THE SLUMS

There are two principal slum areas in Liverpool—one in the north end of about 383 acres and another at the south end of the city of about 100 acres. Most of the houses in the two districts are structurally insanitary. There are rows of them built "back to back." There are other districts where houses have been made insanitary by overcrowding and the habits of the people. The original number of structurally insanitary houses, when the corporation commenced operations, is estimated to have been about 22,000. Of this number, the corporation has demolished about 8,000 and private owners and builders have demolished about 4,000 more. There are still about 10,000 insanitary houses to be dealt with. The average number of persons in these insanitary houses is five per house. Slum houses in Liverpool are generally of three rooms, one above another, although as a rule, the third or upper room (really a garret) is seldom used. Under an act applicable to Liverpool, passed in 1864, compensation is paid to the owners of insanitary property which is demolished, such property having been condemned on a presentment of the grand jury upon a report of the medical officer of health. The corporation is also using the powers conferred upon it by a general act passed in 1890 providing for the "housing of the working classes." This act provides for compensation as a rule; but still, under a certain provision of the act, there can be a "closing order" against any house which is in a state so dangerous or injurious to health as to render it unfit for human habitation. If, on receipt of a closing order the owner makes the house fit for human habitation, nothing more is done; but should there be any default on his part, an order for demolition may issue without any claim for compensation, in case the premises are a danger to the health of the neighborhood. Under both the local act of 1864 and the general act of 1890, where the owner does not elect to retain the site, the corporation must of necessity acquire both land and buildings. In some cases, the land thus acquired is sold by the corporation to private individuals on which to build houses, subject to certain restrictions, so as to secure improved sanitary conditions. In other cases, the corporation itself has built blocks of dwellings. Already, nearly 900 tenements (or suites of rooms) have been erected, and 1,301 additional tenements (or suites of rooms) are in course of building, or contemplated.

THE TENEMENTS OF LIVERPOOL

The Liverpool municipal dwellings are mostly in the form of blocks of tenement houses or "flats," three or four stories high. The local Government board (a bureau directly under the control of Parliament) insists upon certain provisions to meet the necessity of dispossessed tenants before sanctioning demolition operations. Until 1899, there had been a conspicuous failure to meet this obligation, but since then the wants of dispossessed persons have been carefully foreseen and met. The present policy is to have blocks of dwellings ready within convenient distance, into which dispossessed tenants can go immediately they remove from the condemned property. Most of these tenants are dock laborers or a like class. It is claimed that Liverpool alone among the municipalities of England and Scotland has been successful in supplying a type of building within the financial means of the poorest of the poor. A single room can be had for as low as 45 cents a week. The rent of two rooms ranges from 60 to 80 cents; that of three rooms, from $1 to $1.10; that of four rooms (the largest suites provided), from $1.25 to $1.50. The fixtures are simple, but superior to those supplied in like dwellings by private landlords. In a few dwellings, hot water is supplied. Others have gas, paid for on the "slot" principle. Two cents' worth is sufficient for four or five hours' consumption by one burner. Since Liverpool went into this enterprise, it has paid $1,925,000 for demolished property, and, in addition, several pieces of land have been purchased, costing $335,825, for the erection of municipal dwellings. The cost up to date for construction alone has been $732,875. The total burden on the local taxation as the result of these combined operations amounts to 1¾d. in the pound sterling, or 3¼ cents on every $4.86. The rents paid are insufficient by about 2 per cent. to meet the cost of the dwellings, without counting anything for a sinking fund, depreciation, etc. The present effort of Liverpool is to provide housing for the dispossessed tenants of condemned slums. It will probably take twelve years to complete this task. Then, the question of providing better accommodations for artisans and mechanics will possibly be faced. Liverpool, it is said, owns more revenue-producing real estate than any other municipality in the world, its income from this source being about half a million dollars a year.

(To be concluded in July)

MUNICIPAL STREET RAILWAYS IN COLOGNE

In 1878 a Belgian company constructed the first street railway in the city of Cologne, Germany. This road and its branches became the property of the city in 1897 under the following terms: the city of Cologne was to pay an annual sum of $238,000 from Jan. 1st, 1899, to June 30th, 1913; from 1903 $5,950 for each year until June 30th, 1913. The city took possession of all the assets and accessories of the company and the actual cost to the town, therefore, amounted in round figures to $3,927,000. The overhead wire system was decided upon by the city authorities, and $4,284,000 was appropriated for the conversion of the existing lines into this electric traction.

In 1898 the profits amounted to $244,600, and if they increase at the present ate it is expected that by 1914 they will have reached the sum of $566,400.

At present the fares that are charged on the road are as follows: Yearly tickets, that are good on all lines can be obtained for $38.56, monthly tickets, good on all lines, $2.38; good on any one line, $1.66. Ordinary fares for maximum distance are placed at three and one-half cents, and for the minimum distance, 2.4 cents. Children under ten years of age can ride the maximum distance at 1.2 cents. Persons who are attending educational institutions may obtain commutation tickets whereby they can ride the maximum distance for 1.2 cents.

The railways are in the hands of a committee of the town council, and the council appoints an active manager who has the usual staff of engineers, etc. The motormen receive 83 cents and the conductors 71.4 cents for every day of ten hours. While both motormen and conductors have to work every day, two days a month are allowed to compensate them for their Sunday work.

AMERICAN WATER WORKS ASSOCIATION

Its Twenty-second Annual Session—The Topics to Be Discussed—Views of Chicago's Group of Pumping Stations—A Suggested Change of Policy

AFTER considerable trouble and expense, we are enabled to announce the programme for the next meeting of the American Water Works Association. There is no object of more vital importance to American municipalities than that which is made the chief one for discussion at the annual meetings of this association. Its next session will be held at the Auditorium Hotel in Chicago from the tenth to the fourteenth of this month.

THE TOPICS FOR DISCUSSION

Through the courtesy of the Secretary, Mr. Milne, we obtained a list of those who had previously consented to take a place on the programme, but he was unable to give us the subject of each speaker, although he had it in his possession, because he said it was contrary to the rule of the association; that the programme was never announced previous to the morning of the opening of the convention. We immediately sent the following telegram to each person on the programme: "Telegraph title paper for Chicago Water Works Association. Our expense," to which we received the following replies:

"Personal Experience in Water Works Management," by L. N. Case, Manager of the Water Department, Duluth, Minn.

"Diagram of Fire Streams," by S. A. Charles, Supt. Water Works, Lexington, Ky.

"Our Associate Members," by C. H. Campbell, Supt. Water Works, Charlotte, N. C.

"Who Shall Own the Water Meter," by C. W. Wilds, Supt. Water Works, Delaware, Ohio.

"A Peculiar Case of Iron Pipe Corrosion," by W. P. Mason, Rensselaer Polytechnic Institute, Troy, N. Y.

"Two Papers: The Appraisal of the Values of Public Utilities;" "Some Small Water Works Pumping Installations," by Daniel W. Mead, Chicago.

"Apparent essentials of Drinkable Water for Man and Beast," by C. Monjeau, Middletown, Ohio.

"A History of White Plains Water System," by John M. Farley, White Plains, N. Y.

"Management of Water Works," by J. B. Heim, Supt. Water Department, Madison, Wis.

"Subject Purification of Water and Sewerage as Exemplified in the Municipal Plant at Reading, Pa., with Stereopticon Views, by John Jerome Deery."

"Regret inability to submit paper at Water Works Convention this year." (Signed) Walter C. Brough, Gooderich, Canada.

"Will not be able to have paper for convention." (Signed) James P. Donahue, Davenport, Iowa.

Mr. William R. Hill, Chief Engineer of the New York Aqueduct Commission and President of the Association, has taken for his theme "Failures of Dams in the Last Decade." Although Mr. Hill has been very ill and is now in the Adirondack region convalescing, he expects to be present and preside at the meeting of the convention. Inasmuch as he has recommended the alterations which have been authorized by the Aqueduct Commission in the Croton Dam and the Jerome Park Reservoir, and inasmuch as he has had a wide experience as a consulting engineer in similar projects, the members of the convention will be glad to know that he is to discuss so important a subject, as it vitally concerns a great many cities.

THE CHICAGO WATER WORKS

There will be no more interesting subject for consideration by the delegates present at this convention than the Water Works of Chicago themselves. It has, perhaps, the most complete system of pumping stations in the world, there being ten in all. On the following pages we give views of these stations, together with one of the cribs located at one of the intakes.

OFFICERS OF THE ASSOCIATION

1. William R. Hill, President. 2. Chas. E. Rowe, Vice-President. 3. C. H. Campbell, Vice-President. 4. D. H. Maury, Jr., Vice-President. 5. G. H. Felix, Vice-President. 6. Dow R. Gwinn, Vice-President.

A SUGGESTION TO THIS ASSOCIATION

While we do not presume, in any sense, to dictate the policy of this association, we respectfully submit the following for its serious consideration.

In order to make ourselves perfectly understood we will have to relate our experience in securing information about the work of the association. Last year, year before, and this year we endeavored to secure the subjects to be discussed at the annual meetings, previous to the date of meeting, for announcement in THE MUNICIPAL JOURNAL. Each time we have been informed by the secretary that it was contrary to the rules of the association to announce the programme in any publication previous to the date of opening the convention. As the secretary has acted according to instructions, he is not to be criticised for this so long as he acts impartially. Unfortunately, however, there has been a leak in the secretary's office, for each year, during the past two years, the topics for discussion at the meeting have appeared in a certain publication in New York previous to the date of meeting. The secretary occupies desk room in the office of the paper referred to. How this has occurred we do not know; we simply state facts. We assume that the secretary has not given this information to the other publication inasmuch as he declared that he was not authorized to give out any information about the topics to be discussed by the convention previous to the opening of the session.

We would respectfully suggest to the organization that a resolution be passed, authorizing the secretary to give out the topics to be discussed, far enough in advance of the date of the annual meeting so that every publication which is taken and read by water works people and others interested in the annual session of this convention, can have an opportunity to see what is to be discussed. We have the conviction that if this policy were pursued the meetings of the convention would be more largely attended and its influence more widely extended. We believe that the association should not be run in the interest of any publication, but rather in its own interests.

CHICAGO'S WATER WORKS PUMPING STATIONS

1. CHICAGO AVENUE PUMPING STATION. 2. FOURTEENTH STREET PUMPING STATION. 3. SIXTY-EIGHTH STREET PUMPING STATION. 4. STATION AT LAKE VIEW. 5. CENTRAL PARK AVENUE STATION

CHICAGO'S WATER WORKS PUMPING STATIONS

1. CARTER H. HARRISON CRIB. 2. AUXILIARY STATION AT WASHINGTON HEIGHTS. 3. SOURCE OF ARTESIAN WELL SUPPLY AT NORWOOD PARK. 4. HARRISON PUMPING STATION. 5. WEST PUMPING STATION. 6. PUMPING STATION AT SPRINGFIELD AVENUE

MEETING OF MASSACHUSETTS HIGHWAY ASSOCIATION*

The Most Progressive Highway Association in the Country—Bituminous Macadam Subject for Consideration—Many Guests Outside of New England Present—Discussion Most Favorable to New Pavement

AMONG the numerous highway associations organized in different states of the Union none has done better work—and few as good—than the Massachusetts Highway Association. Although New Englanders are thought to be ultra conservative and slow to take up new ideas, yet the spirit which animates this highway association can well be imitated by similar organizations. The members of the association have been talking about this new kind of pavement for a year past. They have been the most critical observers and investigators, many of them having watched the laying of pavements in the different cities with keenest interest. Consequently they were the more ready to take up the serious discussion of this question at this quarterly meeting.

After the members of the association and other guests had been treated to a clambake and other entrtainment, the serious part of the programme was carried out. The President of the Association, Mr. N. J. Driscoll, of Brookline, Mass., presided at this session, and among other speakers introduced the first President of the Association, Mr. E. McClintock, President of the Masachusetts Highway Commission. It may be said that there is no better authority on street and highway construction in the State of Massachusetts than Mr. McClintock, and for this reason greater importance may be attached to his expressions upon the subject. When asked to give his opinion of the pavement inspected at Pawtucket, R. I., he said:

President McClintock's Views

"I think the pieces of pavement we looked at are what every road builder for years has been trying to have, namely, a good, smooth even pavement on a steep hill, which will shed the water, which will wear, and which will not be slippery. I do not know of any pavement that we have to-day which will meet with all those requirements in the same way as it has been met on that 12 per cent. grade by this bituminous macadam.

"The question in my mind, over a year since, when talking to Mr. Warren's brother, was the question of the durability of this kind of pavement. We all know what the tar concrete in side-walks and cross-walks has done for us. We all know that a side-walk which has been built one or two years may go to pieces. We go to another one which has been wearing thirty or forty years. We do not know why the one should go all to pieces in two years and the other last forty years. I understand from my talk with Mr. Warren that what they have been doing is to take up some of these old pavements that have stood for many years, and analyze the materials which entered into their makeup and then they have tried to reproduce, from laboratory tests and examinations, a pavement of exactly the same nature. In other words, that their materials will be of such nature that we may be assured of the pavement's long life. Now, if they succeed in doing that they certainly will have succeeded in adding a valuable pavement for use by roadbuilders in this country.

FIRST COST NOT SO IMPORTANT AS RESULTS

"The question of cost on that 12 per cent. grade that we saw to-day in Pawtucket has nothing whatever to do with it. There is a street where the city has got to put a pavement down—a pavement that will be clean and not slippery, and that will stand the wear. It makes very little difference what that pavement costs, provided they get a pavement that will meet all these conditions. If it costs twice as much as reported, why, it will then cost less in fifteen or twenty years than they have paid out in years past when, after spending all that money, they had nothing left. Of course, the question of cost with the average road builder under average conditions is one that has got to be considered.

"I have been looking at this matter with a great deal of interest to see if it is possible for the road-builders to build a cheaper type of road under certain conditions; that is, in certain parts of the country, where the stone supply is so scarce, and the price of it when put upon the road so great—whether we can by any possible means combine that with some kind of a cement, like a bituminous cement which the Warren Brothers are making, and thus save the high cost of the stone.

SAND ROADS OF CAPE COD

"The experiments in this line exactly coincide with some which our Commissioner has made on the sand roads of Cape Cod, the only difference being that we had used a combination of clay and sand for the matrix or the binder, with broken stone instead of bituminous cement. They both amount to the same thing in theory, although of course, the bituminous cement will probably outlast the other by many years. We have built a road there, by putting two inches of clay upon sand, three inches of stone on the clay, another inch of clay upon the stone, and working the whole mass together and thoroughly watering and rolling, and we have made an excellent road for those conditions, where the stone has to be carried four miles from the railroad station, and has to be transported over one hundred miles by rail, and where it has cost $2.50 a ton when it is dropped upon the road. Under those conditions we have to get something which, united with the stone, will save the high cost of the larger amount of stone. There we have accomplished it admirably on a road in the wilderness, as it were, where there is but a small amount of traffic. I doubt not that this bituminous pavement under certain conditions, in cities, with the steep grades, and the heavily traveled streets, is going to give us a new pavement which will take the place and fill the place much better than will the granite blocks or the asphalt or any of the firmer pavements.

"I must say that after I have looked over the work to-day and heard Mr. Warren's description of the way they have reached the conclusions and gone with Mr. Carpenter (City Engineer of Pawtucket, R. I.) in his various studies that he has made in regard to tar when it is simply poured into the voids of the ordinary broken stones, I feel quite satisfied that the experience which our friends have obtained through their long years of handling asphalt will enable them to give us a bituminous cement which will fill a long needed want."

Superintendant of Streets Ross, of Newton, Mass.

Mr. Charles W. Ross, Superintendent of Streets of Newton, Mass., took part in the discussion and said:

"We have not had so much experience in our city as some others, with bituminous macadam in the way of road construction, still, I think that we have more miles of bituminous macadam walks than other city of our size in the Commonwealth. We have concrete sidewalks that have been laid for over twenty years and that are in good condition to-day. We have also many miles of concrete gutters for carrying off surface water. At the present time we do not calculate to pave any gutters in any other way except by putting down bituminous macadam. We consider that if the work is well done it is the cheapest in the end, and we also believe that if bitu-

* The members of the Massachusetts Highway Association, together with their friends and numerous guests from other states, accepted the invitation of the Warren Brothers Company, of Boston, Mass., to visit the city of Pawtucket, R. I., on May 13, and inspect the bituminous macadam pavement which was laid in that ctiy last year. About eighty persons, including street and road highway commissioners, city and village engineers, commissioners of public works, mayors and other officials from Massachusetts and elsewhere were present. Bituminous macadam was the subject for discussion and the MUNICIPAL JOURNAL AND ENGINEER sent a stenographer from New York to take a special report of the discussions at this important meeting for the benefit of its readers.—[EDITOR.

minous macadam will stand for a gutter at the edge of a street it will certainly stand the traffic in the center of the street, because you know the gutter of a road is at times subject to a great deal harder traffic than any part of the roadbed, because, if a wheel gets out of

WILL STAND UNDER HEAVIEST TRAFFIC

the center of the street with a heavy load, the wheel will slide over into that concrete gutter, and the road being sidling it throws more weight upon that wheel, and hence the gutter gets the hardest and heaviest part of the load. We have never had any trouble at all with breaking up. If they are built properly and put together with proper material I do not hesitate to say that a good bituminous macadam surface is as cheap and as durable as anything we can find.

"I have been very much pleased with the roads we have looked at to-day, especially the one on the steep grade. I think that any town could afford to borrow the money and pay 10 per cent. interest on it for the purpose of putting down a surface like that, on a hill of that grade, because, a hill like that, the street is sure to wash off with the heavy rain, and the dust, when they have a heavy wind, blows it off the surface of the road, and, if it did not deteriorate in any other way, it goes to pieces so much faster that I think the bituminous macadam is a great deal cheaper in the end."

Mr. Warren Describes Methods of Construction

Among the addresses given at this meeting was one from George C. Warren of Boston. He was called upon unexpectedly to take the place of his brother, Mr. Fred J. Warren, who was to have given a description of the bituminous macadam pavement, of which he is the inventor. After preliminary remarks and a clever story, Mr. Warren said:

"The bituminous macadam pavement is a combination of the most desirable features and principles of the ordinary macadam pavement and of the asphalt pavement. Our effort is to combine the desirable features of both, for both have very desirable features, and to overcome the weak features of both.

COMBINES THE BEST OF MACADAM AND ASPHALT

"We endeavor to get the foothold of macadam and to improve on the durability of asphalt, and, at the same time, to retain substantially the smoothness of the asphalt—that is, the general contour of surface. The theory on which the construction is based is that of using crushed stone of varying sizes in certain definite proportion, the sizes varying in proportion so that the finer sizes will fill the voids in the coarser and the still finer voids and so on, from the size of a stone an inch and a half or two inches in diameter to an impalpable powder. Uniform sized stone will have voids of about 45 per cent. Ordinary sand will have voids of about 35 per cent., and the most dense sand which can be made by mixing two or more grades, will have voids of 25 per cent. We combine the coarse and the fine particles, so that the finer will fit into the voids of the coarser, and thereby reduce the voids to 10 per cent., getting the maximum density of crushed stone. Then these materials, after heating the stone, are separated into varying sizes, and brought together in certain accurate proportions which have been previously determined upon by laboratory examination and put through a mechanical mixer with a sufficient amount of bituminous cement to thoroughly coat the particles and fill all the voids so as to make a perfectly air-tight and water-tight concrete.

HOW THE VOIDS ARE FILLED

"This void theory can be very clearly illustrated by taking a box of any dimension and filling it with bullets or small balls two inches in diameter. You get that box full, and you have a certain amount of lead, and a certain amount of air in it. Approximately 55 per cent. of the contents of the box is lead and 45 per cent. is air or voids. You pour into that a lot of half inch bullets, and you will get in a certain proportion more of lead, and still you have your box no fuller than it was before. You put in a still finer size shot and you will have more lead and less voids in the box. So you put in finer and still finer shot until you get down to dust shot, which will pour in like water. Then after you have got all your voids filled, you will have approximately 90 per cent. of lead and 10 per cent. of voids.

NOT A "TAR MACADAM" PAVEMENT

"Now our pavement differs from what is commonly known as 'tar macadam' in this. First, the 'tar macadam' consists of nearly uniform sized particles of stone of about two to three inches in diameter, mixed with ordinary gas tar, and mixed when cold with stone more or less damp, and each particle of stone having a painting of the tar on it. The tar itself has no cementing property—no more cementing property than stone would have. It has to go through a process of manufacture. Limestone goes through a process of manufacture in order to make Portland Cement. So coal tar goes through a process of manufacture in order to make bituminous cement. Every limestone will not make good Portland cement. The stone must have certain characteristics. So it is not every tar that will make a proper bituminous cement even under the most approved method of manufacture. "Tar macadam" pavements merely consist of particles of uniform size, 35 per cent. of their surfaces being merely coated or painted with ordinary gas tar. The only cementing property it has is that of the tar, which has practically no cementing property in the crude state. The point of contact between the two stones is like this (illustrating)—the two stones come together like that, and the pores are all around like that—a space that you could run a mouse through. That gives the greatest possible opportunity for air and water to get in around the stone and disintegrate the pavement. Then after that is done that coating of stone is rolled and they spread over the surface about half an inch of a mixture of sand and tar, which levels up the surface and makes temporarily a nice appearing road.

"The 'bituminous macadam' construction, on the other hand, consists as I have described of stone of varying sizes, mixed in definite proportions to get the greatest possible density of stone and absolutely filling the voids, and then in a heated condition under which the cement is plastic it is raked on the foundation and rolled under a heavy road roller, forming, as I have said before, a bituminous concrete.

AS TO COST AND DURABILITY

"In regard to the two questions which your president has asked. The first was as to the cost. Now that is a very difficult question to answer in general without knowing the particular conditions in each case, but in general the cost, allowing a reasonable profit, is approximately $2.00 or $2.25 a square yard. Or, I should say, to put it as the president asked it, about a dollar a square yard over the cost of the macadam road.

"The other question was as to the durabilty. That depends chiefly, assuming that the work is properly done, upon the durability of the stone or the ability of the stone itself to withstand the wear, our theory being that the stone provides the wearing qualities and the bituminous cement binds the stone together, instead of, as in ordinary macadam roads, depending upon fine particles of stone, which has little or no cementing quality, to bind together coarser particles of stone we bind them all together with a waterproof cement, and that cement is made so soft and pliable that the possible wear on it from abrasion is practically nothing. As the stone wears down, of course, the cement would wear with it. We provide the most favorable condition for durability of the pieces of the stone by cementing them together with a plastic bituminous waterproof cement which shuts out water and air and provides an electric cushion for the stone. We believe that under ordinary conditions it will have a very great durability. The nearest that we can show as to practical result is some of the very old pavements made with bituminous cement. For instance, Massachusetts Avenue, in Washington, was laid in 1873. Instead of being laid with crushed stone that was laid with gravel in the hap-hazard method of those days, going into any bank and digging the gravel and heating it and mixing it with cement. Prof. Dow, the Government Inspector of Asphalts and Cements, and one of the highest authorities on bituminous construction in this country, very heartily indorses our system, and he points to that street and says that it has cost less than one cent a square yard per year for repairs."

SHOULD WATER BE SERVED BY MUNICIPALITIES FREE?

Considered the Better Method—Supplying Water a Public Function—Advantages of the Free Service—Does Not Increase Waste

By J. W. Keegan *

THE city of Santa Rosa, Cal., a municipality having nearly 7,000 inhabitants, has for over five years past operated a municipal water works system without charging or collecting a cent for all the water furnished to its inhabitants during that time, and has derived no revenue or profit therefrom. Furthermore, this policy appears to meet the approbation of the inhabitants as a whole. The charge having been made that the plan adopted by the city of charging the cost of supplying water to its citizens to the property of the taxpayers, it necessarily follows that if the charge be true the citizens who uphold this plan, are doing injustice. I would not be faithful to their interests, were I to permit such a charge to pass unrefuted, and so I will, as far as my ability permits, endeavor to sustain the affirmative of the question.

"Is free service the proper and just method of supplying water by a municipality?"

FREE SERVICE THE BETTER METHOD

Justice is a relative term and I shall not assert that supplying free water, under all possible conditions, attains a position of absolute justness, but shall merely content myself with endeavoring to show that it is a better method of serving this commodity than by the usual method of exacting payment therefor from the individuals served.

Municipalities are organized for the purpose of rendering certain services to their inhabitants, that cannot be adequately rendered by individuals If any one will take the pains to study the growth of municipal functions, he will discover that the powers exercised by municipalities a hundred years ago were few in number and simple in their nature. In fact the functions exercised at that time related almost exclusively to keeping the public peace and to the care of the public highways.

Within the past century (or a little more than a century to be more accurate) we have added to the list of institutions supported by the municipality the following: Public schools, public hospitals, fire departments, sewer systems, public libraries, public parks and playgrounds, and a few other minor institutions.

GROWTH OF FREE PUBLIC INSTITUTIONS

The history of the development of these functions will show that at the time of their first inception they were not supported or maintained at the public expense, but that the individuals who patronized them or were directly benefited by their establishment contributed towards their maintenance. A person sending his children to school paid for the benefits which he received; the owners of goods and buildings liable to be destroyed by fire paid the expenses of the fire department; hospitals, libraries, and even street lighting were primarily paid for by those particularly benefited.

The reasons for changing the system from that supported by individuals to that supported at public expense were that better systems could be instituted, that an equality of sacrifice could be secured by means of a uniform system of taxation and more important still, the benefits of these institutions could be bestowed upon the poorer classes of the community who could not, by reason of their poverty, avail themselves of the advantages offered.

The student of the history of the growth of these public institutions will be struck with the opposition manifested at the time when it was proposed to convert them from quasi-public institutions into full fledged free institutions supported solely by taxation. Most of us remember hearing our parents relate how indignant many people became when it was proposed to tax property for the support of the schools! "Why should I pay to educate some stranger's child?" was by many thought to be an unanswerable question. Yet time has answered the question completely, and it is no longer asked. A similar question was subsequently propounded when fire departments were about to be made a public charge. "Why should the land owner whose property cannot burn be taxed to protect the property of some stranger which is subject to conflagrations?" was at one time a most pertinent question. In turn these questions have been propounded. "Why am I, who have to pay for my own doctor, have to pay for a hospital for strangers?" "Why am I, who own property in town but live in the country, taxed to maintain a sewer system?" "Why should not those who read books pay for them, instead of asking me who can't read to pay taxes to support a library?"

These questions have all been conclusively answered. It is because the duty of the municipality concerns the well-being of its inhabitants. The fundamental purpose of the municipality is to have healthy, educated, happy and contented people. To secure this end, all means are justifiable. The rights of property are subordinate to the rights of the individual.

I am now asked the question. "Why should I be taxed that some stranger may have water to drink, to bathe in and to irrigate his lawn?" This is the identical question, in a new form, that has been asked every decade during the past century.

SUPPLYING WATER A PUBLIC FUNCTION

My answer is: "Because the supplying of water is a public function and the cost of exercising a public function should be borne by taxation. Let those who think otherwise lay down a rule by which public functions may be separated into two classes, one to be supported by taxation and the other supported by private contributions. Let him who reads this try to formulate such a rule and I predict, in the language of the street that "he will be up against it." The arguments that can be used against a public water system supported by taxation can be used with equal force against the maintenance of fire departments, hospitals, sewer systems, libraries, schools and parks.

Mind you, I have assumed that the supplying of water to the inhabitants of a city is a proper public function. The discussion of that question is foreign to this paper. In this connection, however, I wish to suggest to those who believe in the municipal ownership of public utilities that the logic of their position must inevitably lead them to adopt the same position that I have assumed. I cannot conceive of a form of municipal ownership without the exercise of a public function; nor, as I have stated above, I can't conceive of a possible rule by which it can be determined that the exercise of some public functions must be paid for by private contributions, while others must be paid for by a system of taxation.

I furthermore suggest that the municipal ownership of any utility is not complete until its operation is paid for by taxation. Other forms of municipal ownership are only apologies—halfway stations to the full realization of the advantages of public ownership and operation. From my standpoint, then, I am correct in asserting that Santa Rosa is the only municipality in the state—perhaps in the United States—that has a municipal water system owned and operated by the public.

WHAT ARE THE ADVANTAGES OF A FREE WATER SYSTEM?

In the first place it is more economical. The cost of accounting and collecting is done away with. I have looked over the reports of cities having so-called municipal systems and I find that the cost of keeping the accounts with consumers and the collection of water rates amount

* Councilman, Santa Rosa, Cal., in *California Municipalities* for April, 1902.

in many instances to over 10 per cent. of the entire operating expense. If this could be dispensed with the saving would be very material.

If this item of expense could be abolished there would be no question but that public operation would be cheaper than private operation.

One of the disadvantages of the rate system is the annoyance caused to consumers by the monthly appearance of the collector. Very frequently the ordinary householder has no money in the house when the collector comes, and it is at least humiliating to ask the collector to call again. Sometimes it becomes a confession of poverty and we should avoid placing our citizens in such a humiliating position.

Free water, especially in California, is a strong incentive for the beautification of our cities. In most cities people hesitate to plant flowers, lay out gardens and lawns, knowing that they will be taxed in the form of water rates for all such improvements. The poorer classes cannot afford such pleasures. With free water none are too poor to have beautiful gardens, an abundance of shade and green grass. Most of us recognize the civilizing and beneficial effects of such things. The value to the community, too, is great, for the place becomes more attractive to strangers, it is sought for as a place in which to establish homes, the population is increased, real estate values advance and prosperous business comes to the merchants and trades workers.

Furthermore, the very poor are benefited, those who would otherwise have to use water from shallow wells, the waters of which are frequently impure and a source of infectious diseases which sometimes involve the health of the entire community. Certainly the community is a great gainer when all such sources of contagious diseases are for all time closed.

WASTE NOT INCREASED

It has been suggested, however, that free water aggravates the matter of waste; that where a person gets something for nothing he will use it wastefully. Our experience in Santa Rosa has been, that while it is true that there is more waste than should be that the habit of wasting water is largely a legacy from the old system of charging for water at a stipulated price per month. The average consumer has always argued thusly. "I have to pay $2 for water this month and I might as well get all that I can. I'll pay for more than I get anyhow." Consequently he has got into those habits of using water not easy to break off. Municipalities complain of the wastefulness of consumers fully as much as we do. Frugality in the use of water is a matter of education and I am sure that we can appeal more effectively to our people to be frugal than can cities where charge is made for water. The meter system frequently unduly restricts the use of water, so I am sure our system is as good as any in this respect. If we can dispense with meters we have saved a big item of expense. It is cheaper to submit to moderate amount of waste than it is to install and keep up a system of meters.

METHOD INJURES NO ONE

But let us for a moment consider whether or not any particular class of taxpayers are injured by the method of supporting a water system by direct taxation.

At first thought many persons might suggest that the land owner would not be benefited, and hence injured by this method. Upon investigation, however, it will appear that the land owner is benefited. The establishment of a free water system is the same as bestowing a free water right to every square foot of soil in the municipality, and, as a consequence, the land is made more valuable. We know that in many parts of California water is more valuable than land. There are many instances where land can not be sold unless the water right goes with it. Take two lots, all surrounding conditions being the same with each, but one having a free water and the other not, the one with the water will be worth much more than the other, a sum equal to the principal upon which the cost of obtaining water would pay a fair rate of interest.

To illustrate: A's lot has free water; B pays ten dollars a year for water. Ten dollars a year is a fair rate of interest on $100. A's lot is therefore worth $100 more than B's. Two towns one having free water and the other not, may be compared in the same way. Public institutions, even though supported by taxation always add to land values. What would the land of a town be worth that had no schools, no police, no fire department, no public institutions? It would be worth almost nothing, for who would live there? So the land owner will get his money's worth under a free water system.

The owner of improvements upon land will also get his taxes returned, for if he occupies his improvements he gets free water if it is occupied by the tenant he gets increased rent.

The only man who may be injured is he who pays taxes on personal property, and he is no more injured than by a free sewer system. Yet if he be a householder, he has free water, and if his personal property is merchandise which he sells, he can shift the burden of taxation upon the purchaser and the purchasers of the goods pay the merchant's taxes, the same as he pays the merchant's clerk hire.

After all the real tax payers in a community are those who consume the products of labor, for taxes are, except those on the bare land, eventually shifted upon the shoulders of those who eat, wear clothes and pay rent. So in the end those who get free water pay the tax, except that paid by the land owner, and he gets added value to his land, or increased rent.

MUNICIPAL TELEPHONES IN AN ENGLISH CITY

Better Rates Than the Private Company—Guernsey States Telephone Operated at a Profit—Municipal Telephones Successful

We have heard a great deal from the officials of the National Telephone Company and the opponents of municipal telephony generally about the folly of public bodies investing the ratepayers' money in the manner so successfully adopted at Glasgow, Tunbridge Wells, and other places. But the statements of these gentlemen are very seldom supported by figures, and it was with a view to their enlightenment and the encouragement of municipalities to persevere in the telephone enterprise that we draw attention to the balance-sheet that has just been issued by the Guernsey States Telephone Department for the year ended December 31st, 1901. An examination of the capital expenditure, working expenses, reserve fund, etc., will show how silly and false were the pretexts advanced for attacking the Corporation of Tunbridge Wells at the Local Government Board inquiry recently held in the borough. Briefly put, these accounts prove:

1. That metallic circuit telephone lines can be efficiently constructed at a cost of £17 8s. each.

2. That a profit can be made on an annual average receipt of £2 19s. 8d. per line, after paying working expenses, interest, and Post Office royalty, and putting aside for reserve an amount equal to 10 per cent. of the capital outlay.

In support of the first statement we may point out that the capital expenditure on construction at Guernsey on the 31st December last year was £15,332 3s. 5d. Upon the same date there were 881 lines working, exclusive of junction lines, which brings out the cost per line at £17 8s. In addition to the 881 working lines there are about 100 spare or partially completed lines of a value of at least £800. If these were allowed for, the cost per working line would be £16, 9s. 11d.

In proof of our second assertion, we explain that the total revenue from the department for the year was £2,630 6s. 9d., which makes an average revenue per line of £2 19s. 8d. The total capital expenditure on lands and buildings has been £17,574 2s. 4d., and the amount which

has been set aside out of revenue for depreciation and sinking fund, after paying interest, Post Office royalty, and all working expenses, is £1,752 8s. 1d., equivalent to nearly 10 per cent. Notwithstanding this outlay, there was a profit made during the year of £117 11s. 2d.

As these accounts are of exceptional interest just now we reproduce them in full:

DR. LIABILITIES

	£ s. d.	£ s. d.
To capital account—		
Advances from State.....		19,085 0 0
To reserve account for depreciation	1,482 11 9	
To capital sinking fund account..	269 16 4	
		1,752 8 1
To sundry creditors, viz.:		
On stores account	75 15 11	
On construction account ...	70 13 2	
On royalty account	34 16 5	
For expenses and generally	29 4 6	219 10 0
To profit and loss account:—		
Net profit for the year ended 31st December, 1901 ...	117 11 2	
Less loss to 31st December, 1900 .....£300 19 6		
To adjustment account being calls for one quarter ended 31st December, 1900, not included in revenue account for 1900..241 15 8	79 3 10	
		38 7 4
		£21,095 5 5

CR. ASSETS

	£ s. d.	£ s. d.
By Construction Account, viz.:		
1. Land and permanent buildings	2,241 18 11	
2. Works completed and in course of construction	15,292 3 8	
3. Expenses incurred in connection with Nos. 1 and 2	39 19 9	
		17,574 2 4
To stores on hand.....	705 9 0	
To tools	133 9 10	
To stationery	31 7 3	
		870 6 1
By office furniture		100 10 2
By sundry debtors	136 8 8	
By sundry debtors for calls, one quarter to 31st Dec. ..	287 19 6	
		424 8 2
By 17 Guernsey 3 p. c. State bonds at cost		1,700 0 0
By cash at bankers on deposit account	66 0 11	
By cash at bankers on current account	352 15 4	
By cash in hand	7 2 5	
		425 18 8
		21,095 5 5

REVENUE ACCOUNT

DR. EXPENDITURE

1901.—December 31.

	£ s. d.	£ s. d.
To Working expenses—		
Salaries of operators.....	405 5 11	
Line repairs	110 3 8	
Instrument repairs	98 1 10	
Roof repairs	21 19 8	
Way-leave rentals	2 2 2	
Written off tools account...	14 16 7	
		652 9 10
To office expenses—		
Salaries	128 17 6	
Books and stationery	84 19 9	
Postages	22 0 5	
Written off furniture a/c....	5 5 10	
		241 3 6
To general expenses—		
Management	55 5 5	
Rents, rates, gas, etc.....	42 14 8	
Interest on capital	425 2 8	
Post Office royalty	251 4 5	
Commission on public telephone receipts	24 6 11	
Repairs to premises	15 19 9	
Auditors' fees	17 13 9	
Law charges	1 2 6	
		833 10 1
To depreciation 4 per cent. on amount charged to construction account, calculated monthly	628 9 9	
To capital Sinking Fund Account 1 per cent on the amount charged to Construction Account calculated monthly	157 2 5	
		785 12 2
To balance being net profit for the year		117 11 2
		£2,630 6 9

CR. RECEIPTS

December 31, 1901.

	£ s. d.	£ s. d.
By Revenue Receipts, viz:.		
From public telephones	189 9 3	
From exchange rentals	1,279 6 4	
From private rentals	41 10 0	
From sundry rentals	13 3 9	
From calls	1,059 18 1	
From advertisements	2 2 0	
From shifts	1 18 2	
From sales	1 6 4	
		2,588 13 11
By interest on deposit account....	£3 10 2	
By interest on State bonds.....	38 2 8	
		41 12 10
		£2,630 6 9

Generally speaking, the State telephones at Guernsey are "booming." Compared with the preceding twelve months, there has been an increase in the number of lines of 202. The mileage of overhead metallic circuit wires has increased by 158, and the underground mileage by 8½. The average number of subscribers and public telephone connections per day (excluding Sunday) was 1,170, an increase of 366, and the average number of connections for subscribers and public telephone per day (excluding Sunday) was 2.1, an increase of .6. The calls totalled 379,342, an increase of 122,204. The number of subscribers on the various tariffs at the end of the year were: No. 1 (£1 10s. per annum and 1d. per call), 678, an increase of 119 on the preceding year; No. 2 (£5 per annum and 3,200 calls without further payment), 39, an increase of 15; No. 3 tariff (£2 5s. and ½d. per call), 53, an increase of 30.—*The Municipal Journal*, London.

NEW YORK'S NEW ASPHALT SPECIFICATIONS

The Binder Course—The Pavement Mixtures—Refined Asphalt—The Wearing Surface—Laying the Pavement—When Rock Asphalt Is Used—General Requirements

THE new Administration has finally revised the specifications relating to asphalt pavements in New York City. About six months ago a movement was set on foot in New York to revise the specifications relating not only to asphalt, but all other forms of pavement used in New York City. The Engineering Editor of THE MUNICIPAL JOURNAL, who has had a long and extended experience in all classes of paving, besides the benefit of several years abroad, was called in as an expert, to assist in the revision of the old specifications. The work was completed a few days ago and given to the public. As there has been so much discussion about the asphalt question, we reproduce, for the benefit of our readers, those clauses referring particularly to asphalt pavements, which read as follows:

THE BINDER COURSE

Asphalt Pavement.—The pavement proper shall consist of a binder course of one inch in thickness and a wearing surface—inches thick and equal to the Pavement Mixture hereinafter described.

Binder Course.—The binder shall be composed of suitable clean broken stone passing a 1¼-inch screen, not more than 10 per cent. of which shall pass a No. 10 screen. The stone will be heated in suitable appliances, not higher than 325 degrees Fahrenheit and then thoroughly mixed by machine with asphaltic cement equivalent in composition to that hereinafter set forth, at 300 degrees to 325 degrees Fahrenheit, in such proportion as shall be acceptable to the engineer.

The binder must be hauled to the work and spread while hot upon the foundation to such thickness that after being immediately compacted by ramming and rolling until it is cold, its depth shall be at no place less than one inch and its upper surface shall be parallel to the surface of the pavement to be laid. Upon this binder course must be laid the wearing surface, or pavement proper.

The Pavement Mixture

The pavement mixer for the wearing surface shall be composed of: 1, Asphaltic cement (refined asphalt, heavy petroleum oil or liquid asphalt). 2, Clean, sharp sand. 3,Finely powdered inorganic dust.

(a.) Asphalt.—The term asphalt shall be construed to signify any natural (mineral) bitumen, liquid or solid, which is adhesive, viscous, ductile and elastic, or which becomes adhesive, viscous, ductile and elastic on the application of heat. Said natural bitumen may be either in a state of purity or in admixture with native, non-bituminous matter.

(b.) Refined Asphalt.—The refined asphalt shall be obtained by refining crude asphalt until the product is homogeneous and free from water. Such crude and refined asphalt shall be in all respects satisfactory to the engineer. Not less than 60 per cent. of the pure bituminous matter of the refined asphalt shall be soluble in boiling Pennsylvania petroleum naphtha (boiling points, 40 degrees to 60 degrees Centigrade) or, if the refined asphalt does not contain 60 per cent. of its pure bituminous matter thus soluble but is satisfactory in other respects, the deficiency may be supplied by fluxing the refined asphalt in such manner and with such percentage of liquid, viscous asphalt, complying in all respects with the test enumerated in paragraph (c), as the Engineer may require.

HEAVY PETROLEUM OIL

(c.) Heavy Petroleum Oil.—Heavy petroleum oil if used in the manufacture of the asphaltic cement as hereinafter described, shall be a petroleum from which the lighter oils have been removed by distillation without cracking, until it has a specific gravity of 18 degrees to 22 degrees Beaumé and the following properties: (1.) Flash test not less than 300 degrees Fahrenheit. (The flash test shall be taken in a New York State closed oil tester). (2.) Fire test not less than 350 degrees Fahrenheit. (3.) No appreciable amount of light oils or matter volatile under 250 degrees Fahhrenheit. (4.) Matter volatile at 350 degrees Fahrenheit in 24 hours, less than 8 per cent. (The test for "matter volatile at 350 degrees Fahrenheit" shall be made with approximately 50 grams of oil, in an open flat bottom, cylindrical dish 2½ inches in diameter and 1⅜ inches high. The thermometer shall be applied so as to register the temperature of the soil). (5.) It shall be free from coke and any manner or form of adulteration.

Liquid asphalt, maltha, or any other softening agent fulfilling the above tests and approved by the Engineer, may be used in place of heavy petroleum oil.

(d.) Asphaltic Cement.—When refined asphalt is not already of the proper consistency, an asphaltic cement shall be prepared by fluxing refined asphalt with heavy petroleum oil or other approved softening agent, complying with the above specifications, at a temperature between 250 degrees and 350 degrees Fahrenheit and in such proportion as to produce an asphaltic cement of a consistency to be determined by the Engineer. As soon as the fluxing agent is added the entire mass shall be agitated by an air blast or other suitable appliance and the agitation continued until a homogeneous cement is produced. The asphaltic cement must never be heated to a temperature exceeding 350 degrees Fahrenheit. If asphaltic cement containing over 10 per cent. of foreign material is kept in storage, it must be thoroughly agitated when used, as must also all dipping kettles while in use.

(e.) Sand.—The sand to be used shall be hard grained, moderately sharp and clean, not containing more than one per cent. of clay or loam. On sifting the whole shall pass a ten mesh screen, twenty per cent. shall pass an 80 mesh screen, and at least seven per cent. shall pass a 100 mesh screen.

(f.) Inorganic Dust.—The inorganic dust shall be finely powdered carbonate of lime, granite, quartz, or other inorganic dust approved by the Engineer. Such inorganic dust must be of such a degree of fineness that the whole of it shall pass a 30 mesh screen, and at least 66 per cent. a 200 mesh screen.

THE WEARING SURFACE

(g.) Wearing Surface Mixture.—The materials complying with the above specifications shall be mixed in proportions by weight, depending upon their character. These proportions will be determined by the Engineer, but the percentage of matter soluble in carbon bisulphide in any pavement mixture shall not be less than 9½ nor more than 12 per cent. If the proportions of the mixture are varied in any manner from those specified, the mixture will be condemned, its use will not be permitted, and, if already placed on the street it will be removed and replaced by proper materials at the expense of the Contractor.

The sand and the asphaltic cement will be heated separately to approximately 325 degrees Fahrenheit. The stone dust shall be mixed, while cold, with the hot sand. The asphaltic cement will then be mixed with the sand and stone dust, at the required temperature and in the proper proportion in a suitable apparatus so as to effect a thoroughly homogeneous mixture. Sand boxes and asphalt gauges shall be weighed in the presence of inspectors as often as may be desired and samples of any of the materials used shall be supplied to the inspector of asphalt at any time, and the engineer or his representative shall have access to all branches of the work at any time.

LAYING THE PAVEMENT

(h.) Laying the Pavement.—The above described materials shall be mixed in the determined proportions in a standard asphalt mixer and carried to the street at a temperature ranging from 250 degrees to 325 degrees Fahrenheit and spread upon the binder to such a depth as will insure a thickness of 2 inches after ultimate compression. This compression will be attained by first smoothing the surface with a hand roller, or a light steam roller, after which hydraulic

cement shall be swept over it, when the rolling will be continued with a ten ton roller until no impression is made upon the surface. A space of 12 inches next the curb shall be coated with asphaltic cement and the same ironed into the pavement with hot smoothing irons.

Rock Asphalt

Should any of the rock asphalts be used, the material shall be a natural bituminous limestone or sandstone or a mixture of the two and shall be prepared and laid in the following manner:

The lumps of rock, after being mixed in the proper proportions shall be finely crushed and pulverized, and the powder passed through a 20 mesh sieve. In case of the use of any asphaltic limestone, or of a mixture of an asphaltic limestone and an asphaltic sandstone, nothing whatever shall be added to or taken from the powder obtained by grinding the natural bituminous rock. Should it be proposed to use an asphaltic sandstone only, which contains more than 9 per cent. of natural bitumen, of such a consistency that the resulting pavement would prove too soft to sustain traffic, the material, if satisfactory in other respects, should be made to conform with the requirements of Section 21, by the addition of inorganic dust, in such manner and in such proportion as the Engineer may direct. The powder shall contain from 9 to 12 per cent. of natural bitumen. This powder shall be heated in a suitable apparatus to 200 degrees or 250 degrees Fahrenheit and must be brought to the ground at a temperature of not less than 180 degrees Fahrenheit in carts made for the purpose, and carefully spread as specified for refined asphalt pavement, to such depth that after having received its ultimate compression it will have a thickness of 2½ inches when laid on concrete. When the foundation is other than concrete it shall be laid on a one-inch binder course as heretofore described, and the net thickness of the rock asphalt wearing surface after compression, shall be 2 inches. The surface shall be rendered perfectly even by tamping, smoothing and rolling with heated appliances of approved design.

General Requirements

The materials complying with the above specifications shall be mixed in such proportions and within such limits, by weight, depending on their character, as shall be determined by the Engineer, but whatever may be the character of the asphalt, or of the asphaltic cement used, the pavement obtained must and shall conform to the following general requirements. The pavement when laid shall not be so soft as to be unfit for travel on the hottest days of summer, nor so hard as to disintegrate from the effects of frost. It shall contain no water nor appreciable amount of light oils, nor matter volatile at a temperature of 250 degrees Fahrenheit. It shall yield when extracted with bisulphide of carbon and after the evaporation of the solvent, not less than 9½ nor more than 12 per cent. (except in the case of rock asphalt when the limit shall be as established in Sec. 22) of pure bituminous matter, of which bituminous matter not less than 65 per cent. shall be soluble in boiling Pennsylvania petroleum naphtha, boiling points 40 degrees to 60 degrees Centigrade. All of the mineral matter shall pass a ten mesh per linear inch sieve, and not less than 18 per cent. shall pass a 100 mesh per linear inch sieve, while the remainder shall be graduated between these limits. If rock asphalt be used the same shall be laid in accordance with Sec. 22.

In case of repairs, it shall be required that such repairs be made with a pavement mixture equal to the above described.

MUST TAX THE FRANCHISES

By Our Special Correspondent

THE Supreme Court of the State of Nebraska has issued a peremtory writ of mandamus compelling the City Council of Omaha to reconvene as a board of equalization and equalize the assessments of the street railway, water, gas, telephone and electric light companies so as to tax the franchises. This order is the result of a bitterly contested legal battle precipitated by the action of the council, when, while acting as a board of equalization it refused to hear evidence proffered by the Omaha Real Estate Exchange for the purpose of showing the real value of the franchised corporation properties. Complaint was made by the exchange that the corporations were escaping with assessments which represented only about 10 per cent. of the actual value of their properties while real and personal property of individuals was being assessed at 40 per cent. of its value. The equalization board received the complaints, fixed a time for hearing on them, and then adjourned sine die before that time came. Then the Real Estate Exchange went to the Supreme Court and applied for the writ which was issued.

In the hearing on the application for the writ the corporation attorneys, six of the ablest lawyers in the city of Omaha, endeavored to convince the court that the writ, if issued, would be nugatory, because, they argued, the 40 per cent. basis to which the petitioners wanted the corporation assessments raised was illegal for the reason that the law specifically says that "all property be assessed at its fair value." On this point, the court, in allowing the writ, said:

"The statute requires that all property be assessed at its fair value, but this does not prevent the Board of Equalization from equalizing assessments when property in general in the city has been assessed at a certain percentage of its fair value and upon complaint that the property or franchise of a person or corporation is assessed at a less proportion of its value than the percentage of value employed as a basis for assessing the property in general in the city, the board may equalize assessments by raising the assessment complained of to the same proportion of value at which property in general in the city is assessed."

Another argument made by the corporation lawyers was that the assessments, as left by the board of equalization, were fair for the reason that a section of the revenue act of Nebraska provides that the assessor shall deduct the amount of the corporate indebtedness from the actual value of the shares of stock to determine what shall be assessed as capital stock. This section of the revenue act the court holds unconstitutional and void, saying:

"The constitution (section 1, article ix) provides: "The legislature shall provide such revenue as may be needful by levying a tax by valuation so that every person and corporation shall pay a tax in proportion to the value of his, her or its property and franchises, the value to be ascertained in such manner as the legislature shall direct.

"This provision of the constitution does not allow the indebtedness of individuals or corporations to be deducted from the true value of property or franchises in determining the value of such property and franchises for taxation, and if the "manner" of assessment prescribed by the legislature when strictly pursued would result in so doing and would not result in levying a tax "by valuation so that every person and corporation shall pay a tax in proportion to the value of his, her or its property and franchises" it violates the constitution and is so far invalid."

The decision of the court, which compels the city councilmen to act for the people rather than for the corporations, has been hailed with delight by the citizens of Omaha, who for years have not only been paying exorbitant prices for water, gas, electricity and other services, but have been the victims of an inequitable taxation, in which the public service corporations have been shirkers.

The Real Estate Exchange, which in this matter represents all of the taxpayers of Omaha, insists that the five public service corporations ought to be assessed at about $5,000,000, whereas the total as passed by the board of equalization is only $1,800,000. The tax levy of the city for the year 1902, which should have been made months ago, is tied up by injunction until the Council carries out the order of the Supreme Court.

Pursuant to the mandate of the court the Council is now in session as a board of equalization, and is hearing evidence on the value of the public service properties and franchises. It has already raised the assessment of the electric light company from $117,500 to $175,000, and that of the telephone company from $109,310 to $175,000, but the greatest increase, it is expected, will be made in the assessments of the street railway, gas and water companies, which are yet to be acted upon.

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CITY PLANS AND PARKS

THERE is no instance, perhaps, where the old adage, "fools rush in where angels fear to tread," is more applicable than when a man—any man—undertakes to establish a plan which shall be strictly followed for fifty years or more, in the development of the whole or any part of a municipality. Every city, town and village has one or more individuals who is willing to take upon himself the responsibility of laying out such a plan for the development of the city. Unfortunately for the rest of humanity there is no way in which the results of this person's foolhardiness can be heaped upon his own head and the innocent saved from punishment. It is with the hope that the citation of one marked instance will serve as a warning to those in authority in various municipalities of this country, that we call attention to the example set by William Penn in his plan of the City of Philadelphia. Friend William had a theory as to how a city should be laid out. With Quaker-like precision, his descendants and the citizens of the Quaker City have followed his directions, and with unfortunate results. His plan had one good feature, but that one has not been followed at all systematically, while the least desirable one has been perpetuated.

The most striking characteristic in Penn's scheme was the large amount of open ground deemed necessary for the development of park area. If this part of his scheme had been as faithfully carried out as the other, Philadelphia to-day would have two hundred and eighty small parks instead of the forty-five now owned by the city, and the work of an association for the development of small parks would be uncalled for. This, the most important specification of the original plan, was long ago forgotten, and no attempt was made to carry it into effect until less than twenty years ago. This has been a sin of omission, the consequences of which are almost beyond the power of the civic authorities to remedy. If ever the original scheme is carried out it will be at the expense of millions of dollars.

The evil consequences incident to the carrying out of the other portion of Penn's scheme is only too evident to those interested. The main feature of this related to the development of the streets. His idea was to have straight streets and square blocks, without a curve, or a diagonal. It has been perpetuated in the public's mind, and is as little recognized as an evil by the present generation as it was by its author. It is commonly known as the "grid-iron" system. This idea has been carried out with unremitting perseverance, chafing when it has met natural roads of travel too well settled to be vacated, but, throwing its severe mantle of unloveliness over its roads, using them as the basis for new squares on squares. The most striking example of this instance is found in the development of Broad street. Unlike the lovely, rolling, winding course of the Old York Road, Broad Street has been projected by the unthinking engineer along its unbending progress, following the unattractive, straight line, without apparent end or object.

It is too late for Philadelphia to profit much by the broader intelligence of the present time, but it is possible that other cities and towns may learn something from her misfortune. The greatest evil of this scheme has not been experienced simply in the undeviating lines which have been followed in the laying out of the streets. As a matter of fact, it has been the smallest part of it. The engineer in his crazy effort to follow rigid lines and grades, has ruthlessly destroyed some of the most attractive features. He has brought all things to a common level. The beauty of the trees, the rise of a slight grade, the unevenness and picturesqueness of the land, has apparently been a source of annoyance to him, and he has sought to reduce it all to the commonplace, for the sake of securing an even grade. The beauty of the great forest trees has had no charms for him and they have been recklessly destroyed as new streets have been laid out and old ones extended.

This iconoclast of civic beauty forgets that winding, curving streets are far more picturesque than straight ones, and that they are particularly more delightful for residences, whether for the employed or unemployed. Curving and diagonal streets give much greater opportunity for diversity of architecture than straight ones. It is understood, of course, that main thoroughfares or avenues should be straight, and that the main business streets are better if they are straight, although there are some notable exceptions to this rule to be found among both American and Foreign cities. There is not only no need for a man's home being located on a straight avenue, but it will be more attractive if it is not. One object of the existence of the City Parks Association of Philadelphia is to correct the evil which has so long dominated in the development of the city. Fortunately for this association it finds in Mr. George S. Webster, Chief of the Bureau of Surveys, of Philadelphia, one who is more than willing to co-operate in an endeavor to correct this evil.

A part of the mission of THE MUNICIPAL JOURNAL is not only to show the good ideas and plans that are adopted by other cities, but also the bad ones that are in operation. We consider that in this instance, where the unfortunate part of Penn's scheme has been perpetuated by Philadelphia, there is an excellent opportunity for other municipalities to learn a valuable lesson. It ought to save them large expense, because it gives an excellent description of how not to do it.

THE FENDERLESS CAR

No sane person living in large cities, desires to go back to the horse car stage of existence. As a means of rapid transit the trolley car is infinitely superior to its predecessor; but there are some things in connection with the modern electric car which we could easily dispense with; we refer to the frequency with which men, women and children, are run down and killed or maimed for life. These accidents and fatalities, in most cases, could be prevented if greater care were exercised by the motorman, and if the cars were equipped with modern fenders to insure greater safety to the unlucky pedestrians.

We wish to call attention particularly to the non-use of suitable car fenders upon several lines within the limits of Greater New York. Of the sixteen lines of the Metropolitan Street Railway Company and its connections, five are not equipped with car fenders. These happen to be lines where the danger is the greatest, and therefore, where the need of car fenders is greatest. They are Broadway, Columbus Avenue, Lexington Avenue, Third Avenue, and the Union Railroad.

According to newspaper reports, where names and dates have been given, more than sixty people have been killed outright by fenderless electric cars within the past five years, in Greater New York. Why this unnecessary loss of life? Why should a great corporation be permitted to kill our citizens at the rate of one a month, regardless of the protests of a few people who take an interest in the matter?

If it is desirable to have fenders on any of the cars why not on all of them? It is said that fenders cannot be used on Broadway and a number of other lines, because they take up so much room and seriously interfere with the traffic. The more people there are on the street the greater the need of fenders. They are placed on the cars to protect life, and we maintain that it is much better to save lives, even at the expense of interfering with traffic on these congested streets, than it is to leave the fenders off and sacrifice lives at the rate of one a month, not to mention the numerous accidents which do not prove fatal.

As a matter of fact, there is no truth in the statement that the fenders cannot be used on the cars running on Broadway and other lines, because they impede the traffic. The best evidence of this is that fenders are used where there is just as much traffic as there is on Broadway, and where there are just as many lives placed in jeopardy. But even if it is true that fenders cannot be used on Broadway there is no reason why they should not be used on Third Avenue, because many of the Third Avenue cars run over the same streets, and in some cases, on the same tracks where the Metropolitan cars are using a fender. As, for instance, in the Bowery, Amsterdam Avenue, One Hundred and Twenty-fifth Street, and a number of other streets in the city.

Fenders are often made useless because they are not kept in repair. The managers of the Metropolitan road contend that they cannot afford to keep the fenders in good repair as the expense is so great. Everyone considers this corporation a money maker, and we doubt if it would care to be looked upon in any other light, and for this reason it seems rather heartless to offer the excuse that it cannot afford to keep its fenders in perfect repair even though it means the saving of several lives a year. The company is not obliged to keep them in repair and therefore it shirks its duty. This is a matter which should receive the earnest attention of Boards of Aldermen in every city, as the evil exists not alone in New York.

TO INVESTIGATE THE TELEPHONE

THE Board of Aldermen, of New York, recently passed a resolution, introduced by Alderman Walkley, of the Borough of Brooklyn, which will interest aldermanic bodies thoughout the country. The resolution introduced is as follows:

"Whereas, The telephone in recent years has come into quite general use and is now considered a necessity in commercial and mercantile houses, and is in demand in industrial commerce, professional and domestic life, and

"Whereas, The City of New York, with its large population and its vast commercial and manufacturing interests, presents a most promising field for the operation and extension of this system, and

"Whereas, Complaints arise on every hand from varied interests and varied citizens as to the excessive charges made for the service rendered and for the lack of uniform rates throughout the city, and

"Whereas, We have learned that the tolls for the use of the telephone in the City of New York are considerably higher than in other cities of a lesser population, be it

"Resolved, By the Board of Aldermen of the City of New York, that a special committee of five be appointed to make a thorough investigation of the breadth and scope of the charters and franchises under or by which the telephone system of this city is conducted; to ascertain the amount of taxes paid to the city by the corporation controlling the telephone system; the amount paid by the city in its various departments for telephone service; the total number of telephones used by the city in each borough thereof, and also to investigate the amount received by the city for the use of the various subways in which telephone wires are placed, and to devise or suggest some fair, equitable and legal plan by which the amount paid by the City of New York and its citizens for telephone service can be materially reduced; and to endeavor to establish uniform telephone rates throughout the entire city.

"Resolved, That for the purpose of carrying out the intent of the above resolution said committee be, and hereby is, empowered to subpoena witnesses to take testimony, under oath, and is directed to make a special report on its investigations and conclusions to this body on or before January 1, 1903."

The City of Chicago made a similar investigation some months ago and it would not be a bad idea for cities throughout the country to carefully examine various telephone franchises under which telephone companies are operating. City officials are, as a rule, altogether too careless in seeing that corporations live up to the terms of their franchises, in consequence of which the general public is the sufferer. There is an opportunity here for some wide awake mayor or alderman to distinguish himself by being more diligent in the discharge of his duties and conserving the interest of the taxpayers as well as the general public.

NEW YORK CITY'S FRANCHISE TAX LAW VALID

SOMETIME ago Judge Robert Earl, a distinguished lawyer of this state, and for many years a Judge of the Court of Appeals, was appointed by order of the Supreme Court, referee in the matter of the Franchise Tax Law of 1889, passed through the influence of Governor Roosevelt. In the early part of last month he rendered his report sustaining the tax in all particulars except one. It seems that the State Tax Commission, in valuing special franchises as real estate, assessed them at their full value. It was shown that in no county in the State is real estate assessed at full value. In the findings of Judge Earl he asserts that the valuations fixed by the State Tax Commission upon special franchises should bear the same relation to the full value as now practiced in the different counties by the local assessors in assessing real estate. For instance, the Metropolitan Street Railroad of New York was assessed at full value, the amount being $70,100,940. Under Judge Earl's decision the total valuation will be on a 67 per cent basis or $46,967,930, as real estate in New York County is assessed at 67 per cent. of the full value.

This part of the decision is really no victory for the corporation attorneys, because the State's attorneys for the past two years have conceded that special franchises should not be assessed at full value, but at the percentage of local value adopted in the different counties in assessing real estate. Upon this basis, during the past year, an agreement has been reached between the Attorney General's Department and the corporations in Buffalo, Rochester and Albany, and the Telephone and Telegraph Companies in New York City, whereby they have paid their tax under the special franchise tax law.

The corporations, however, intend to carry the question of the constitutionality of this law through the State Courts and possibly to the United States Supreme Court, if the Court of Appeals decides against it. In that case it will be several years before this litigation will be finished.

In the argument before Judge Earl it was held that the Franchise Tax Law was unconstitutional as being in conflict with that provision of the State Constitution which guarantees home rule. Section 2 of Article X provides: "All city, town and village officers whose election or appointment is not provided for by this Constitution, shall be elected by the electors of such cities, towns or villages, or of some division thereof, or appointed by such authorities thereof, as the Legislature shall designate for that purpose."

Judge Earl contends that the question in every case arising under the home rule provision is, "Has the Legislature taken away from officers elected or appointed in the locality, any function essential to home rule? If it has, this act must be condemned; if it has not, the act must stand." He points out that the franchises taxed under the act were never before taxed, and that, while they were property, they were not so specified that they could be assessed or taxed; that these franchises were intangible property, having no precise circumscribed status; that the Legislature in this act made this property taxable, and permitted its assessment by the State Board of Tax Commissioners, and that while the tangible property used in the streets in connection with these franchises was before assessable by local assessors, still, taking the assessment of the two kinds of property from the local assessors is not a substantial violation of the rights of local self-government. The act is not "such a clear violation of the home rule provision of the State Constitution as authorizes any court to pronounce it invalid on that ground." Judge Earl further contends that the special franchise tax does not violate the Federal Constitution by impairing the obligation of con-

tracts; that the act is practicable and workable; and that there is nothing in the general objections to the assessment made under it to show their illegibility or invalidity.

The reasons set forth by Judge Earl are perfectly sound and while, of course, it is impossible to say whether his decision will be upheld or not by the superior courts, his presentation of the case is as strong as could be made.

TO ABOLISH THE CAUSE OF NEW YORK'S WASTE

THE Merchants' Association of New York City, has presented a plan to Mayor Low by means of which a large amount of the waste of public funds will be abolished. The Association proposes to undertake work that will, First, analyze and classify all the conditions properly within the scope of the city's business management; Second, devise a system of records, reports, estimates, accounts and audit upon the principles employed in the management of railroads, large manufacturing plants, and similar business enterprises; Third, move for legislation to give effect to such a system and compel adherence to its essentials by successive administrations.

Mayor Low heartily indorses the proposition of the Association and answers the question why the Administration cannot perform this work itself. "The answer is a two-fold one," said Mayor Low, "First, because no funds are at command for the purpose; and, Second, because everybody connected with the city government is so busy with his own proper work, that his attention cannot be diverted to an undertaking of this sort. I think such an inquiry, under the auspices of your Association, would be well under way before authority could be had to make it in any official way. I think, also, that the results of an outside inquiry, in such a matter as this, might be more likely to meet with general acceptance than if the inquiry were looked upon as identified with one particular administration."

This effort of the Association demonstrates very clearly how useful an organization, which is made up of business men, may become to any city in properly administrating its affairs. Boards of Trade, Chambers of Commerce, and similar organizations now doing work in various municipalities, can extend their usefulness by the performance of work similar to the above, provided it can be done in a non-partisan way. We feel confident that the average city administration will be glad to co-operate with any body which has a similar purpose in view.

EDITORIAL COMMENT

One of the public playgrounds in Kansas City is to be fitted with a shower bath for children. This is the work of the Athanæum, a woman's club of that city. This is a good example for other cities to follow.

Street Commissioner McClintock, of Rochester, N. Y., proposes to put a stop to the emptying of ashes and rubbish in the alleys or streets. He has entered upon a crusade against this evil and is determined to fine every person detected in disobeying the ordinance prohibiting this practice.

Pittsburgh is one of the few large cities which has no public baths. There has been considerable agitation about the subject, but for some reason, the Council Committee having the matter in charge has not found time to act upon the matter. It seems strange that a city which has so many privileges for the public to enjoy should be slow in installing free public baths. A public bath should precede a public library.

The new Superintendent of the Albany Water Works is reported to have said, "I won't leave a Democrat in office any longer than I can help myself." If this be true it is a pity that the authorities cannot remove the superintendent's official head and put some one in his stead who will make removals only in case of incompetency. There are too many city officials holding positions because of political pull.

"The voters should kick and continue to kick," says a correspondent of the *Dallas News*, "Like a Texas mule until our city Council sees fit to put up street signs." There are about 150 cities in the United States whose citizens should enter as vigorous a protest as this Texan against the inactivity of the civic authorities in providing suitable street signs. Now that New York has opened the way for street signs all other cities should follow.

Mayor Katzenbach, of Trenton, N. J., recently vetoed an ordinance granting a franchise to a heat and power company. His reason for doing so was that the ordinance gave the company authority, almost unrestricted, unlimited as to time, and without compensation to the city. We congratulate the city of Trenton upon having a mayor who keeps his eyes open and protects the rights of the citizens. No franchises of this character should be granted in perpetuity without compensation to the city.

The Councils of Scranton, Pa., propose to incorporate in a new franchise granted to a gas company, a clause which shall provide that the company shall pay for damages caused to asphalt pavements by the escape of gas. It is said that where it can be shown that damage to the asphalt pavement has been caused by gas in the city of Scranton, the asphalt company laying the pavement cannot be required to re-pave at its expense, and so the city is obliged to pay the price. This is a provision which should be inserted in every gas franchise.

It is stated by an English contemporary that the seven companies supplying gas to London and its suburbs, lost, in one year, the enormous amount of 1,714,399,000 cubic feet of gas in the ground, or an average loss of 534,414 cubic feet per mile. This quesion of gas leakage is one which is just beginning to attract general attention among American municipalities. It is one which should have the serious consideration of special aldermanic committees, as much property is destroyed during the year because of fires started by gas leaking from the mains. Besides loss of property, the gas leaking into the ground, makes it almost impossible to maintain vegetation of any kind in our streets, particularly trees and shrubs. There are well known methods of laying gas mains which make leakage impossible, and it is the duty of every municipality to see that gas corporations lay their mains and service pipes in a proper manner so as to avoid the destruction of all classes of property.

MAYOR JOHNSON, of Cleveland, is bound to have a three-cent fare on the street railways of his city. When he secured the acceptance of a franchise, which involved a three-cent fare, by a new company three months ago, the point gained was taken into courts, but has finally been decided in his favor. Construction on the new line, as provided for in the recent franchise, will soon begin, and not many months will elapse before a three-cent fare may be enjoyed by the people of Cleveland upon at least one street railway route. In the meantime, the Mayor's critics have been taunting him with his failure to secure a three-cent fare upon all the street car lines within the city, inasmuch as that was one of his pre-election promises. The Hon. Tom, however, has not been idle, and whether we agree with him or not in his present crusade, we are bound to give him credit for persistent activity. His latest action is that taken through his Board of Control, in declaring that after the present franchises on two important lines expire, year after next, the right to operate these lines shall be awarded, for twenty years, to the bidder accepting the lowest fares. In bidding for these franchises a way is left for real competition, but while it is expected that the franchises, when renewed, will be granted to the old companies, it is believed that they will be willing to take the new franchises with a three-cent fare provision. It is not improbable that the old companies will also concede the three-cent fare on their entire systems in order to retain control of other lines. If the Mayor succeeds in his endeavor it will add another proof to the feasibility of operating the street car lines in cities of that class on a less than five-cent fare basis. Columbus, O., has been practically operating its lines upon a four-cent fare basis for many months, as it sells seven tickets for a quarter, which is a

little cheaper than that rate. Toronto, Canada, has had a three-cent fare for some time, and without serious results to the street car company. While Detroit has a number of lines which charge a three-cent fare, it is limited to certain hours of the day, so that the real value of a low fare can be appreciated only by a certain class during the rush hours. Our readers will gain a better understanding of the franchise situation in Cleveland from an article by Prof. Bemis upon that subject found elsewhere in this number.

LETTERS TO THE EDITOR

NO ABSURD FIRE REGULATIONS IN BERLIN

NEW YORK TIMES, EDITORIAL, May 13, 1902.

Editor, MUNICIPAL JOURNAL AND ENGINEER:

The article on page 223 of your May issue, entitled, "Absurd Fire Regulations in Berlin," contains many misstatements. Prof. Boice's experience was very different from that described. He was not arrested for turning in a false alarm in Charlottenburg, and the many amusing incidents of the fire in his house did not include ignorance on his part of the boundaries of his district. In point of fact he did not ring the alarm at all—it was done by a hack driver, who earned a mark for so doing. I was in Berlin at the time, knew Prof. Boice well and my family were at his house the day of the fire.

Concerning the Mitchell incident I have no knowledge. I venture to say, however, that it is incorrectly reported. The local ordinances of Berlin do not forbid a resident to save property by extinguishing fire, but might with the obliteration of evidence tending to fix the responsibility for its occurrence. I have had some experience of this kind, and can say from intimate personal knowledge that Berlin is the best and most wisely governed city I have ever seen. It has no foolish requirements. J. C. BAYLES.

The information used in the above mentioned article was obtained from an Englishman whom we deemed reliable. It seems, however, that we have been misinformed and are glad to be corrected. —[EDITOR.

SALARIES OF CITY ENGINEERS

————, CANADA, May 2nd, 1902.

Editor, MUNICIPAL JOURNAL AND ENGINEER:

MAY I venture to ask you to publish in your most valuable paper a list of the salaries of the city engineers for different cities in the United States?

ERNEST BELANGER, *Ass't City Surveyor.*

While the salaries which city engineers receive vary greatly in many cities, the following list will give some idea as to what is being paid for this kind of work:

Alexandria, Va.	$1,500	Memphis, Tenn. b	2,500
Allegheny, Pa.*	2,500	Milwaukee, Wis. †	4,000
Amesbury, Mass.‡	1,500	Minneapolis, Minn.	4,300
Appleton, Wis.	700	Nashua, N. H.	1,200
Aurora, Ill.	1,200	Newark, N. J.	4,000
Baltimore, Md.	4,000	North Adams, Mass	1,800
Boston, Mass.	6,000	Pittsburg, Pa.	4,000
Bridgeport, Conn. a	2,500	Portland, Ore.	2,400
Buffalo, N. Y.	4,000	Providence, R. I.	4,500
Canton, O.	1,500	Rochester, N. Y.	3,750
Chelsea, Mass.	1,600	Rockford, Ill.	1,200
Cincinnati, O.	4,000	Scranton, Pa.	2,000
Cleveland, O.	4,000	Somerville, Mass.	2,500
Columbia, S. C.	1,500	Springfield, Mass.	1,800
Detroit, Mich.	3,000	Stamford, Conn.	1,000
Elgin, Ill.	600	St. Paul, Minn.	5,000
Gloversville, N. Y.	1,500	Troy, N. Y.	3,000
Holyoke, Mass.	2,500	Wheeling, W. Va.	1,000
Houston, Tex.	2,000	Wilkesbarre, Pa.	1,200
Jackson, Mich.	1,500	Willimantic, Conn.	900
Louisville, Ky.	3,000	Worcester, Mass.	3,000
Lowell, Mass.	2,700	Youngstown, O.	2,000

* Supt. Bureau of Engr. and Surveys. † Pres. of Bd. ‡ Supt. of Streets. a Dir. Pub. Wks. b Street Com'r.

STREET SPRINKLING AND TELEPHONE INFORMATION

————, ALA., May 1, 1902.

Editor MUNICIPAL JOURNAL AND ENGINEER,

Kindly send me right away, as comprehensive a list of cities as possible, which are making their street railway systems help sprinkle the streets.

GEORGE B. WARD, *Alderman.*

Immediately upon receipt of this letter we mailed inquiries relative to the practice in the 135 largest cities, at the same time making inquiries about telephones. We give below the responses which have been received up to date of going to press. We shall doubtless have others to publish in our July issue—[EDITOR.]

	Do railways pay for street sprinkling?	No. telephone companies.	Rates per year. Bus.	Rates per year. Res.	Telephone company paid for franchise.	Wires underground in business districts?	Telephone company gives for franchise.
Albany, N. Y.	N	2	a $90	a $72	....	O	* $2,072
Allentown, Pa.	Nf	2	v $30	to $15	....	O	$1 pole
Augusta, Ga.	T	2	60; 33	36; 25	Nt	O	Nt
Baltimore, Md.	T	2	125; 48	100; 36	Nt	Y	Taxes
Bayonne, N. J.	T	1	70	70	Nt	O	Fp
Binghamton, N. Y.	N	2	60; 30	24; 15	Nt	N	Fp
Birmingham, Ala.	N	2	48; 36	36; 24	Nt	Y	Fp
Boston, Mass.	N	2	† 25	to 163	Nt	Y	‡ p.c.
Bridgeport, Conn.	T	1	100-72	48	Nt	Y	Nt
Buffalo, N. Y.	..	1	v 36	v 36	....	..	.....
Cambridge, Mass.	||	1	90	72	Nt	Y	p.c.
Camden, N. J.	N	2	36; 90	24; 60	Nt	O	p.c.
Chattanooga, Tenn.	N	1	48-36	36-24	Nt	O	Fp
Chelsea, Mass.	N	2	30	20	Nt	N	$1 pole Fp
Chicago, Ill.	T	2	v 175	v 100	Nt	Y	3 p.c.
Cincinnati, O.	1c. ft.	1	v 100	v 60	*	Y	County tax
Cleveland, O.	T	2	36-84	24-60	Nt	Y	Fp ‡
Dayton, O.	T	..	.....	.....	Nt	Y	Fp
Denver, Colo.	..	1	72	36	Nt	N	Nt
Des Moines, Ia.	N	2	36	24	Nt	Y	Nt
Detroit, Mich.	T	1	v 72	42	Nt	Y	Nt
Dubuque, Ia.	..	2	24	12	Nt	O	Fp p.c. ¶
Duluth, Minn.	N	2	30	20	Nt	O	½ p.c. E
Elmira, N. Y.	N	2	60; 30	30; 18	....	Y	Fp
Erie, N. Y.	N	2	40	28	Nt	Y	$1 pole ‡
Evansville, Ind.	N	1	60	36	Nt	N	Nt
Fitchburg, Mass.	N	1	54-108	25	Nt	Y	p.c.
Ft. Wayne, Ind.	N	2	36	18	2 p.c. E	Y	.....
Grand Rapids, Mich.	N	2	30	18; 24	Nt	Y	.....
Hartford, Conn.	T	1	25-100	48-25	Nt	Y	State tax
Haverhill, Mass.	N	2	.....	.....	Nt	Y	‡
Indianapolis, Ind.	N	2	40; 72	24; 48	....	Y	$6,000 yr
Jersey City, N. J.	T	2	v66; 36	v51; 48	....	Y	$1,301.53 yr
Johnstown, Pa.	N	2	24; 30	18; 24	Nt	Y	50c. pole
Kansas City, Kans.	N	1	96	50	Nt	N	Nt
Knoxville, Tenn.	N	2	25; 24	20; 18	Nt	N	Nt
Lancaster, Pa.	N	2	24;25	12; 18	Nt	O	$500, 50c. pole
Lawrence, Mass.	N	1	57-84	25	Nt	Y	Nt
Lincoln, Neb.	N	1	48	36	Nt	Y	$500 yr
Little Rock, Ark.	S	2	36	30	....	N	50c. pole
Los Angeles, Cal.	N	1	48-96	15-48	....	Y	Sold high. bid
Louisville, Ky.	..	1	72-96	12-48	....	..	.....
Lowell, Mass.	N	1	30-90	25	Nt	Y	Nt
McKeesport, Pa.	N	2	24; 36	18	....	N	Fp
Malden, Mass.	N	1	.....	.....	Nt	..	Nt
Manchester, N. H.	N	1	84-25	66-25	....	Y	.....
Milwaukee, Wis.	..	1	96	v 60	....	..	.....
Minneapolis, Minn.	..	2	84; 48	64; 30	....	..	.....
Mobile, Ala.	N	2	30	18	Nt	Y	$150 yr
Nashville, Tenn.	N	1	60-84	48-60	Nt	N	$1 box
Newark, N. J.	..	1	48-150	30-75	....	..	.....
New Bedford, Mass.	N	2	36; 75	24; 36	Nt	Y	1 co. Fp ‡
New Haven, Conn.	T	1	48	18-48	Nt	Y	Nt
Newton, Mass.	I	1	v 93	v 75	Nt	N	‡ p.c.
Norfolk, Va.	S	2	60; 38	36; 28	Nt	Y	3 p.c. E
Omaha, Neb.	N	1	90	66	Nt	Y O	Nt
Paterson, N. J.	N	2	per No. calls		Nt	Y	Q
Peoria, Ill.	T	1	60	18	Nt	Y	Fp
Pittsburg, Pa.	..	2	84; 48	60; 36	....	..	.....
Providence, R. I.	M	1	120-96	v 25	....	Y	3 p.c. E
Quincy, Ill.	N	1	24-36	18-24	Nt	N	Fp
Reading, Pa.	N	1	30-72	24	Nt	Y	Fp
St. Louis, Mo.	N	2	100; 60	60; 48	....	Y	5 p.c. E
St. Paul, Minn.	N	2	84-60	54-30	....	Y	Fp
Salem, Mass.	I	1	25-84	25-66	Nt	Y	Nt
San Antonio, Tex.	P	2	36; 60	24	....	Y	Fp
Schenectady, N. Y.	I	2	33; 45	24; 45	Nt	Y	Fp
Scranton, Pa.	N	2	80; 36	24; 24	Nt	Y	2 p.c. E
Seattle, Wash.	N	1	72	v 30	....	Y	.....
Sioux, City, Ia.	N	1	27-48	18-39	Nt	N	Fp
Somerville, Mass.	I	1	30-162	24-126	Nt	O	‡
Springfield, Ill.	N	1	48	24	Nt	..	Fp
Springfield, Mass.	Q	1	63-90	25-48	....	Y	‡
Tacoma, Wash.	N	1	72	v 30	Nt	Y	40 Fp
Taunton, Mass.	N	1	48	25	Nt	Y	p.c.
Trenton, N. J.	N	2	36;45	24; 30	Nt	Y	Nt
Troy, N. Y.	N	1	54	v 24	Nt	Y	Nt
Washington, D. C.	N	1	120	90	Nt	Y	Fp
Wheeling, W. Va.	N	2	36; 50	18; 36	Nt	Y	Fp
Wilkes-Barre, Pa.	N	2	39; 30	24	Nt	Y	Fp
Worcester, Mass.	N	1	63-90	25	Nt	Y	p.c.
Yonkers, N. Y.	T	1	90-39	54-30	Nt	Y	Fp

Nt. Nothing. N. No. Y. Yes. O. Overhead also. * State franchise tax going to city. a. One party line—4 party line $48 bus., $36 res. F. Done by fire companies. v. Varies according to service. T. Between tracks only. Fp. Free 'phones to public buildings. † According to contract. ‡ Free use of poles and conduits. || Subscription of $1,000 to city. p.c. Discount on city 'phones. ¶ Pays portion of salary of city electrician. E. Gross earnings. S. Sprinkles free all improved streets traversed by tracks; city supplies the water. M. Per car mile $0.15. I. Indirectly by tax for construction, repair and maintenance of streets. P. $100 per month. Q. $100 per mile.

Evansville, Ill., contemplates a municipal system after July 1, 1902. Rates separated by semi-colon refer to the two companies separately.

CONVENTION DATES

JUNE

The League of Wisconsin Municipalities will hold its annual meeting at Grand Rapids, Mich., June 5-6.

The American Water Works Association will hold the twenty-second annual convention at Chicago, Ill., June 10. Peter Milne, 99 Nassau street, New York City.

The fifteenth convention of the Wisconsin State Firemen's Association will be held at Reedsburg, Wis., June 18-20. John Claridge, secretary, Reedsburg.

The American Institution of Electrical Engineers will meet at Great Barrington, Mass., June 18-21.

AUGUST

The tournament of the Illinois Firemen's Association will be held at Blue Island, Ill., August 5-7. Walter E. Price, Champaign, Ill.

The American Park and Outdoor Art Association will hold its sixth annual meeting at Boston, Mass., August 5-7. Warren H. Manning, secretary, 1101-4 Tremont Bldg., Boston.

The Connecticut State Firemen't Association will hold its nineteenth convention at West Haven, Conn., August 12-13. John S. Jones, secretary, Westport, Conn.

The Thirteenth convention of New York State Firemen will convene at Hudson, N. Y., August 18-22. Henry Buxbury, secretary, Hudson.

The sixteenth convention and celebration of the Virginia State Firemen's Association will be held at Portsmouth, Va., August 20-22. G. C. Cummings, secretary, Portsmouth.

The League of American Municipalities will hold the annual convention at Grand Rapids, Mich., August 27-29. Hon. John MacVicar, secretary, Des Moines, Iowa.

SEPTEMBER

The convention and tournament of the Iowa State Firemen's Association will be held at Davenport, Ia., September 1-4. H. Horan, secretary, Muscatine, Ia.

The fifth convention of the National Firemen's Association meets at Detroit, Mich., September 11-12. D. W. Gillen, secretary, 176 E. Monroe street, Chicago, Ill.

The Association of Chiefs of Police of the Pacific Slope will meet at Portland, Ore., September 16. Chief Hodgkins, Oakland, Cal.

The International Association of Fire Engineers will hold its convention at New York City on September 16-19. Henry A. Hills, secretary, Wyoming, O.

OCTOBER

The International Association of Municipal Electricians holds its seventh convention at Richmond, Va., October 7-9. E. P. Foster, secretary, Corning, N. Y.

The twenty-third convention of the Pennsylvania State Firemen's Association meets at Bradford, Pa., October 7-10. W. W. Wunder, secretary, Reading, Pa.

The annual convention of the American Society of Municipal Improvement will be held on October 7-10 at Rochester, N. Y. E. A. Fisher, president, Rochester, N. Y.

The American Street Railway Association will meet at Detroit, Mich., October 8-10. T. C. Penington, Chicago, Ill.

PERSONALITIES

—Mr. J. P. Maxwell is now City Engineer of Boulder, Ill.

—Mr. Earl Pollock is the new City Engineer of Victor, Colo.

—Mr. Harvey Linton was re-elected City Engineer of Altoona, Pa.

—Chester, Pa., elected Mr. Charles H. Ladomus its City Engineer.

—Mr. Henry Connolly is the newly appointed City Engineer of Racine, Wis.

—Mr. Robert O. Hayt has been appointed City Engineer of Corning, N. Y.

—Hon. Robert A. Smith, Democrat, was re-elected Mayor of St. Paul, Minn.

—Mr. H. L. Montaudon has been appointed City Engineer of Orange, Tex.

—Mr. William Jackson has been re-appointed City Engineer of Boston, Mass.

—Mr. Charlton A. Reed has been elected Mayor of Morristown, N. J., on the Democratic ticket.

—Mayor A. A. Ames of Minneapolis, Minn., has practically decided to leave politics and the city, removing to West Baden, Ind.

—The first election under the new charter of Plattsburg, N. Y., resulted in the elevation of Mr. Albert Sharron to the office of Mayor.

—Mayor Livingston Mims of Atlanta Ga., has stated that he does not wish a second term even if the charter is so changed as to permit of re-election.

—Mayor James Duffield of Buckner, Mo., who was elected on the Prohibition ticket, has been fined $10 and costs for selling liquor contrary to the laws.

—Mr. R. Tasker Steele has been re-elected president of the City Improvement Society of Hamilton, Ont. The work of the Society has done much to beautify the city.

—Mayor J. Adger Smyth of Charleston, S. C., has been admitted to the order of the Woodmen of the World as an honorary member, the first of this class to be enrolled.

—Mayor F. F. Vanderberg of Brooklyn, Ill., has been indicted by the Grand Jury and arrested for forgery, malfeasance in office and conspiracy to obtain money under false pretenses.

—The Grand Jury of Toledo, O., has indicted ten men for bribery in municipal deals. Among the men so charged is City Attorney Moses R. Bailey, who was indicted on four counts.

—Mayor M. J. Walsh of Yonkers, N. Y., and the seven living former mayors of the city participated in a tree-planting bee. Each mayor planted a tree for the adornment of the park.

—Resolutions have been adopted by the New York State Canal Board complimenting Mayor Erastus C. Knight of Buffalo, N. Y., on his conscientious attention to the duties of the Board.

—Mayor Ignatius A. Sullivan of Hartford, Conn., recommends that voting machines be universally used in the city at the next election inasmuch as they have demonstrated their superiority over the present method of voting.

—Mayor Seth Low of New York fell into the toils of the Water Department inspectors for using a hose without having a meter to register the amount of water. As this is a violation of an ordinance, a fine of $5 was imposed.

—One of the improvements for the health of Jersey City, N. J., that Mayor Mark M. Fagan is trying to bring about is to have the whole city vaccinated. The Health Board has approved the plan and hopes to have everybody vaccinated before the cold weather comes again.

—The Mayor and Board of Alderman of the city of Alexandria, La., have been indicted by the Grand Jury for permitting slot machines to be run in opposition to the law. All other municipal officers are severely criticized for not enforcing the Sunday laws against the saloons.

—Dr. H. F. Billmeyer the new Mayor of Bellevue, O., startled politicians by demanding the resignation of the two members of the night police. The officers did not resign so he suspended them and said that, if the Council did not sustain him, he would continue to suspend the old members and appoint new officers from week to week.

—Mr. Charles O. Klein, who was recently elected Mayor of Uhrichsville, O., fled to Zanesville before his inauguration and refused to return until his successor was elected. Mr. Klein is new in politics and his nomination was forced upon him. He says he did not want to be elected and found the only way to get out of it was to leave town.

—The City Council of Ironton, O., has re-elected City Clerk George H. Davies. *The Daily Register* says that his re-election is "a commentary on the good judgment of the Council and an evidence that body has for meritorious work." Clerk Davies has introduced many original ideas in the care and preservation of the city records and other city clerks have adopted them with profit.

—The annual message of Mayor Steinbach of Quincy, Ill., was a hot shot for the alderman in the matter of the way influence is brought to bear by those desiring franchises. He recommends that, in the case of a new contract with the gas company, the aldermen keep in touch with the private consumers and that the several city associations appoint committees to consider the question and report to the Council.

—In his annual review of the municipal affairs in Oakland, Cal., Mayor Anson Barstow recommends that the city be beautified in every possible way and that large improvements be made to the sewer system. The city charter should be so changed that the Mayor should not only have the power to appoint subordinate heads of departments as at present, but also the power to remove them for cause inasmuch as "sometimes men change their minds when temporarily clothed with authority."

—The annual message of Mayor Wessel of Moline, Ill., contains the recommendation that business principles be applied to public affairs, that the city purchase a street sprinkler, that the city lay its sewers in districts, assessing the cost according to the benefits, that the city put in a 6,000,000 gallon pump and a mechanical filter. He states that the fire department is in excellent condition and the order of the city most gratifying and that the death rate has decreased two and one-half per cent. in two years.

—Because he wants municipal supervision of traction companies, Mayor Justice of Lafayette, Ind., has vetoed a street railway franchise. In view of the lack of a time clause in the franchise, he says there is danger in granting privileges. "You cannot be sure the management of the street railway will remain as at present under control of home people. It will drift into the control of outside capitalists who will consult their own convenience in place of ours. Frame your ordinance so that you will have some control over the traffic within the city limits.

—Mayor Thomas J. Powell of Fort Worth, Tex., says, in his annual report, that the water works have been a losing proposition heretofore but now the financial problem has been solved. He holds that the salaries of the school teachers are too small and that civil service rules should be applied to all departments of the city government. He says that the heads of departments should be elected by direct vote of the people. He recommends that the city charter be so changed that the city have the power to regulate and control the rates charged by the owners of public utilities. "Monopoly of essential services involves the power of levying taxes on the community. Taxation is primarily designed for the public good, but in the unhampered and unregulated exercise of public utilities, the sovereign power of taxation for the public good is tranformed into the despotic power to tax for private gain. Any charge for a public necessity is a tax upon the citizen, who is compelled to accept an arbitrary rate of taxation without representation whenever he uses or accepts the services. A private monopoly, without power of regulation or control by the legislative power of the government, is a sovereign power in private hands, and is radically wrong and against the democratic principles of our government."

BALTIMORE SELLS ITS RAILROAD STOCK.—The City of Baltimore has at last disposed of the stock of the Western Maryland Railroad which it has held for a long time. The Gould interests have taken over the securities, which are equivalent to over $9,000,000. As soon as the bonds were disposed of, Councilman Pratt introduced an ordinance in the Council to solve the problem of Baltimore's sewerage. His ordinance is nothing more than the Municipal Art Society's bill as submitted to the Legislature. Mayor Hayes is heartily in favor of the sewer system and is anxious to build it without going to the Legislature for permission but he is not yet certain if the money can be used for this purpose.

A NEW STATE LEAGUE.—On April 29th, at Alexandria, La., was perfected the organization of the State League of Municipalities of that state. This action was brought about largely through the efforts of Mayor F. M. Welch, of Alexandria, at whose instigation a convention was called to meet in his city. Several important papers were read, and the work for the coming year blocked out. The latter includes the passage of certain laws which will conserve the interests of the municipalities of Louisiana. The following officers were chosen: Mayor F. M. Welch, of Alexandria, president; James T. Zacharie, of New Orleans, first vice-president; H. N. Coulon, of Thibodaux, second vice-president; R. A. Hunter, of Alexandria, secretary; R. L. Pruyn, of Baton Rogue, treasurer. The next meeting of the League will be held in New Orleans, next year.

ROCHESTER LOSES ITS TELEPHONE CASE

THE decision in a legal case of great importance to the city of Rochester, N. Y., and all parties concerned, has just been handed down by the referee to whom the case was referred. Action was begun in 1899 by the city against the Bell Telephone Company to compel the defendant company to place its wires in the conduits of another company in a certain street. The Bell Company set up as a defense that it was dangerous to place the telephone wires or cables in the same conduit with electric light or power wires. This formed the main ground for its defense, and upon this issue nearly one hundred witnesses were examined. The referee decided the case upon this point, holding that it was dangerous to allow telephone wires to be placed in the same conduits with those carrying heavy currents of electricity.

While the referee recognized that there would be some damage and inconvenience to the public on account of a separate conduit for the telephone company, yet he considered that the damage was more imaginary than real. He admitted that high and low tension wires were used in the same conduit but "the preponderance of evidence is to the effect that this is not safe or advisable, and should be avoided if possible. The witnesses who have testified, speaking from a long experience and familiarity with the subject, have suggested ways and means by which danger can be very much lessened. . . . From the facts developed upon the trial, and for the foregoing reasons, and others which might be suggested, I am of the opinion that a permanent injunction should be denied, and that the complaint should be dismissed." As a result of the decision, the Bell Company will obtain a judgment against the city for about $3,500, which is exclusive of the expenses of the trial.

THE GOVERNMENT OF ST. JOHNS

THE city of St. Johns, New Foundland, has a population of about 30,000. The government of the city is vested in a municipal council of three members who are appointed by the Governor. The Chairman of the Council is appointed by the Governor also, and receives a salary of $600 per annum. His assistant councillors receive half as much. A member of the Council is appointed for life or good behavior, and is not subject to political removal. The annual revenue and expenditure of the city is about $100,000. This is met by an annual assessment of 6 per cent. on appraised rental for occupants of houses, 3 per cent. on appraised rental for owners of houses, and 5 per cent. on appraised rental of vacant lands. Taxes are also levied on steam ships plying about the harbor, and there are also shipping rates which are payable annually on all vessels that enter the port. The other taxes are: on every horse, $2.00; two wheel carts or four wheel carriages, $3.00. Pedlars, $10.00. Fire and marine insurance companies, $100.00; life and accident companies, $50.00; companies with a capital of $2,000,000 or less, $500; exceeding $2,000,000, $600. Gas, telephone or telegraph companies, $400; electric light companies, $200. Billiard tables, etc., $10. Fifty cents per ton on all coal imported. The city debt of St. Johns is about $1,000,000, which is more than met by the assets.

There are thirty miles of graded streets, twenty miles of sewers, six miles of water mains leading to the city, and eighteen miles within the city. The supply of water is by gravity from Windsor Lake, which is situated four and one-half miles from the city, at an elevation of 500 feet. The supply is ample for all purposes, and of the best quality.

The fire department is under the supervision of a chief, and three district chiefs. There are twenty-two men in regular service and 120 held in reserve. The reserve men are paid for each fire, but this only applies to the first four that arrive at each ladder, they receiving $1.00 each. The equipment consists of eleven horses, three steam fire engines, one chemical engine, one hand engine, three extension ladders, seven hose reels, and a salvage ambulance wagon. The fire pressure in the business portion of the city is one hundred pounds. The Gamewell electric fire alarm system has been installed with over forty-five boxes.

CURRENT NEWS AND PRACTICE AMONG THE CITIES

Rubber Tires for Garbage Wagons—A Great Joint Outlet Sewer—Municipal Ownership in New Orleans—Water Meters for Chicago—Juvenile Court for New York—Oiling the Streets

WOOD PAVING FOR NEWCASTLE.—City Engineer Edge of Newcastle, England, has submitted a report to the Town Improvement Committee on wood paving. The amount available for this work is $450,000 and $190,000 of this will be devoted to the paving of three principal streets.

TO DISINFECT THE SEWERS.—The Department of Public Safety of Philadelphia, Pa., has been authorized to contract with a firm called the "Sewer Disinfecting Apparatus Company," for the purpose of putting in the patented devices to disinfect the sewers. The city will pay the company a royalty of one mill per linear foot of sewers per month which are fitted with these devices.

CAN WEAR SHIRT WAIST—The State Superintendent of Public Instruction of North Carolina has decided that the school authorities at High Point cannot debar a boy from school because he wears a shirt waist. The superintendent made a similar ruling not long ago sustaining a boy who denied the right of the school authorities to dictate to him what he should or should not wear as long as he did not shock public decency by his attire.

EXTENDING MOLINE'S WATER WORKS.—The Water Works of the city of Moline, Ill., will be improved this year by installing a 5,000,000 gallon high tide pumping engine, a filter system of 3,000,000 capacity, and clear water reservoir with a capacity of 750,000 gallons. There is also contemplated for the future a service reservoir for the storage of water, of 2,500,000 gallon capacity, to store water under pressure, and a stand tower of 200,000 gallons capacity for the high water service.

TO IMPROVE COLUMBUS STREETS.—Mr. Robert L. Johnson, Supt. of Public Works, of Columbus, Ga., writes that the broad streets of the city are being greatly improved. The principal features of the plan consist in the narrowing of the present roadway and the making of parks and lawns in the centre and on the sides. The streets at present vary from ninety-nine to 132 feet in width, and the driveways which will be constructed after the improvements, will vary from twenty-three to fifty feet in width.

PHYSICAL EXAMINATION FOR SCHOOL TEACHERS.—The city of Chicago has determined to compel all applicants for positions as teachers in the public schools to pass a physical as well as educational examination before they are licensed. This cannot fail to produce a better condition of health both for teachers and pupils, for a teacher who is in good health is not only a better teacher but it more cheerful and healthy minded than when the strain of work shows in every word and act, and her influence on the scholar cannot but be for the best.

JUVENILE COURT FOR NEW YORK.—The City of New York will soon have in operation a court for the purpose of trying juvenile offenders. Mayor Low has appointed former City Magistrate W. H. Olmsted, a Justice of Special Sessions, to preside at this Children's Court in attendance with a law passed at the last Legislature establishing this court. This is the first court of this character to be established in New York, but from the experience that Chicago has had, it is probable that the greatest benefit will be derived from separating children's cases from those of adults.

HEALTH DEPARTMENT AFTER NOISY CAR WHEELS.—The Health Department of New York has determined to enforce its order against noisy cars. Inspectors have been sent out to take note of the number of cars that are running with flat wheels. As the result of one hour's investigation, 104 flat wheels were counted by the inspectors. It is the purpose of the Health Department, after notifying the company to replace these imperfect wheels, to have the sanitary police hold up every car that has such a wheel, and send it back to the stables.

WIDE TIRES REQUIRED ON WAGONS.—Seneca Falls, N. Y., has just passed an ordinance requiring the owners of heavy loaded wagons to place four-inch tires on the wheels. This ordinance is of importance in this locality, for there is little road making stone in the region, and the narrow tires on wagons soon cut up the best of roads. One of the foundries in Seneca Falls has improved a portion of the road adjoining their establishment by covering it with foundry stone, which contains more or less iron. This material hardens up and forms an excellent surface for road wear.

TACOMA REDUCES ITS WATER RATES.—Mayor Campbell, of Tacoma, Washington, has approved an ordinance looking to the reduction of water rates for the city. The charges for water will be eighty-five cents for a house of five rooms; formerly it was one dollar. For each additional room ten cents will be added, the same as heretofore. The charges for closets and bath tubs has been reduced from twenty-five cents to twenty cents each. For every horse the rate is twenty-five cents. No reduction has been made in the sprinkling rate, but the season has been reduced from five months to three.

OILING THE STREETS.—The great advantages that have accrued to California cities from using oil to lay the dust, instead of water, are being recognized by many cities, and especially in those in which the supply of water is rather limited. Minneapolis, Minn., is considering the use of oil on her outlying highways, and it has been determined to sprinkle the roads of Hennepin County this year, with crude petroleum. Before starting the plan of oiling the roads, however, the County Surveyor will await the arrival of the Good Roads Train with its special machinery for doing this work, and its experts who will inform him of the best methods.

WATER METERS FOR CHICAGO.—City Engineer Erickson of Chicago, Ill., advocates the use of meters in the city as the most effective means of checking the enormous waste. He asserts that 75 per cent. of the total amount of water pumped is due to waste and leakage. In 1890 the daily pumpage of water amounted to 152,000,000 gallons; in 1900 the daily amount was 323,000,000 gallons, which increased to 340,000,000 gallons in 1901. The per capita consumed for 1890 and 1900 is placed by Mr. Erickson at 126 and 161 gallons, and this is based on a much larger population than given in the United States census.

MUNICIPAL OWNERSHIP IN NEW ORLEANS.—In advertising for bids for lighting the city of New Orleans, La., for a period of ten years, a provision was placed in the contract whereby the lighting plant shall become the property of the city after the termination of this period. The bids for furnishing the city with light for ten years amounted to $2,648,000. At present New Orleans is paying $2,215,000 for the same period, but the plant will not eventually become the property of the city. While the bid for lighting is considerably larger than that now paid, 1,000 more arc lights have been provided for than are at present in use.

A GREAT JOINT OUTLET SEWER.—On March 27 ground was broken for the great outlet sewer in New Jersey that is to carry off the sewage of Elizabeth, Summit, Morristown, Irvington, Vails-

burg and the Oranges and empty it into Staten Island Sound, twenty miles away. At the outlet and for one-half a mile, the sewer is to be six feet in diameter; one-quarter mile is to be sixty-six inches, six miles forty-two inches, three miles thirty-eight inches, two miles thirty-three inches, five miles twenty-four inches, and the rest smaller sewers. In order to equalize the flow, there will be a series of storage tanks to be filled during the maximum flow and discharged when the normal flow is minimum.

BAY CITY GETS IN LINE.—By a vote of seventeen to three, the Council of Bay City, Mich., has at last settled the question of what time shall be used in the city. For a long time there has been a controversy between two factions representing standard and local time. The matter has been brought up again and again in Council, but has been laid over until the present. Now it has been resolved that after May 1st the legal time shall be standard. The great confusion that arose from the use of two times in the city could not have failed to result in the present step forward, and it is only surprising that it has taken over six years to secure the necessary votes in the Council for the establishment of standard time.

RUBBER TIRES FOR GARBAGE WAGONS.—Some of the garbage and ash wagons in use in the city of Trenton, New Jersey, have been equipped with rubber tires because of the numerous complaints that have been sent to the city department of the noise that these wagons make when collecting at night. The city purchased their ash wagons from the Columbia Wagon Company, of Columbia, Pennsylvania, and their garbage wagons from the United States Sanitary Company, of Washington, D. C. These are the wagons that are equipped with rubber tires. It is estimated that with proper care the tires will last from three to four years, although they are not guaranteed beyond one year. The tires are supplied by the McGovern Rubber Tire Company.

LIGHT AND POWER MONOPOLY IN ROCHESTER.—The long contested fight for the control of light and power in the City of Rochester, N. Y., has ended in a victory for the Rochester Gas and Electric Company. Two other companies were formed to contest for the lighting of the city, viz., the Municipal Gas and Electric Company and the Citizens Light and Power Company, but the Rochester Gas and Electric Company has finally absorbed these two companies and thus has the monopoly in its own hands. The Municipal Company, while having no tangible property, threatened to establish a plant in competition with the old company, and it was some time before the Rochester Gas and Electric Company could secure control of the stock. This company now owns absolutely 90 per cent. of the water rights of the city.

NO LONGER COMPELLED TO "TAKE THE CAR AHEAD."—The Board of Aldermen of the City of New York have just passed an ordinance which is calculated to abolish one of the nuisances which is incident to travel on the surface roads. Heretofore it has been the practice of the Metropolitan Railway to run cars as far as one of the stables and there request the passengers to step out and take the car ahead for the rest of their journey. On account of the numerous complaints that have been made the Aldermen have passed this ordinance making it necessary for the railway company to run their cars to whatever point is indicated on the sign, and in the event of a violation of this rule the said company shall pay a penalty of $100, to be recovered by an action brought in the name of the City of New York.

SCHOOL BOOKS MUST BE DISINFECTED.—An ordinance of Salt Lake City, Utah, provides that none of the school books shall be covered with any material other than paper. In all schools in which there is a free distribution of books such books, after having once been used, must be re-covered and thoroughly disinfected by the Board of Health. The student once having received a book shall keep the same as long as that book is necessary for his studies. It is unlawful for the schools to collect pencils, sponges or other articles used by the students for the purpose of re-distributing them to other students. A violation of any provision of this ordinance is punishable by a fine of $25. The ordinance was passed because of the remarkable spread of scarlet fever and diphtheria among school children, and it was thought that much of the disease was spread by means of books and other things used in the school and passed from one pupil to another.

GLASGOW'S WATER SUPPLY.—The engineer engaged to inspect Glasgow's water supply with a view to increasing its output, reports that the level of Loch Arklet must be raised and the leading of that water into Loch Katrine is necessary. The water of Loch Katrine will be raised five feet by a dam at its outlet so that it will give a supply of 65,000,000 gallons per day. The aqueduct which will carry the water to the city is large enough to convey 70,000,000 gallons a day, and added to the 40,000,000 which the old aqueduct will pass, will make a total of 110,000,000 gallons for the city. During 1901 an average daily quantity of water taken from the Loch was 54,000,000 gallons, and assuming that the consumption of water will increase at the rate of 200,000,000 gallons per day per year, the available quantity of 65,000,000 which can be drawn from Loch Katrine will be reached in 1907. The engineer estimates that the cost of the work which will enable the city to obtain this increased supply will amount to $725,000.

ACETYLENE GAS IN FRANCE.—Statistics have been compiled by a French paper dealing with gas illumination in France. It has been found that 1,150 towns employ coal gas, 320 electricity and 200 both gas and electricity. There are only thirty municipal gas works, and there are 1,200 towns of some importance where only petroleum is known. It is calculated that while these 1,200 towns cannot afford to adopt coal gas or electricity, they can put in acetylene plants, because acetylene costs very little more than petroleum. As compared with coal gas, acetylene is fifty per cent. cheaper, while electricity, although convenient, is costly. An acetylene plant which costs three-quarters the price of an equivalent electric light plant, and one third that of a coal gas, will give double and triple the amount of light in return. For a town requiring 500 burners, of which 40 are in use for the streets, the cost of installing an acetylene gas works is estimated to be about $3,390. Expenses for a year would aggregate $2,734, including reserve and depreciation. Receipts are estimated at $3,450.

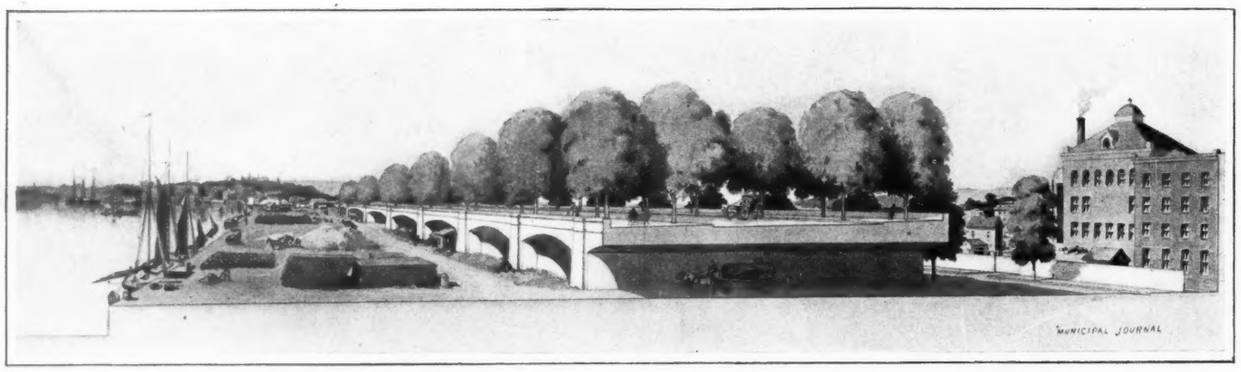
PAVEMENTS IN GLASGOW.—The material used for most of the streets of Glasgow, Scotland, consist of granite or whinstone. This material, while the most durable, is very objectionable on account of the noise and the authorities have been experimenting with various kinds of smooth pavement, such as macadam, alcatraz and seyssel. During the past year 22,228 square yards of this material were laid, in the proportion of 17,951 yards of tar macadam, 2,283 yards of seyssel and 1,994 yards of alcatraz. It is the opinion of many that seyssel promises the best results. The alcatraz is very satisfactory but not so good as regards wear. On account of the climatic conditions the smooth pavements are very seriously affected, and the firms that manufacture the materials assign the failure of their work to this cause. Wood paving does not seem to be in great favor, although it has been tried to some extent. The objection to wood paving in Glasgow has been based upon the old style of cedar block. If the authorities should experiment with the modern creosinate wood block the many advantages of that form of pavement, with none of the objectionable features of the old style, would be self evident.

GOOD BREAD FOR MONTREAL.—The reports of the City Food Inspectors from time to time have stated that the bread supplied in Montreal is not as good as it should be, and a by-law has been drafted which is calculated to improve the supply. Hereafter—if the by-law is passed—a brown loaf of bread shall not weigh less than six pounds and a white one, four pounds, and each loaf shall bear the initials of the baker and a number indicating the weight of the loaf. A fine of $40 and a term of imprisonment of two months are

the penalties for violation of these provisions. The inspectors shall visit the bakeries where bread and pastry are made, as well as all the places where such commodities are offered for sale, and they shall have the power to seize all bread that does not meet the requirements of the proposed ordinance. Another section provides that all bakeries shall be placed in the most sanitary condition with air shafts, windows, etc., sufficient to insure proper ventilation. All rooms for the manufacture of food products shall be eight feet in height, with floor of cement or tile or of wood properly saturated with linseed oil. The walls and ceilings shall be whitewashed at least once in three months. No animals, except cats, shall be allowed in any room used for the manufacture or storage of bread and pastry.

THE BEST PUBLIC SCHOOLS IN THE WEST.—The leading educators in the country were asked to give their opinions as to what city in America had the best system of schools and what system gave it that reputation. Indianapolis, Ind., stood first in the list; Springfield, Mass., and Chicago, Ill., stood next; then came Cleveland, O.; Boston, Mass.; New York City; Yonkers, N. Y.; Kansas City, Mo.; Brookline, Mass., and Minneapolis, Minn.

The reasons that Indianapolis was declared the best as regards school system are because power was given the Superintendent by the School Board; the Superintendent chose the best teachers and gave them freedom to exercise their originality in instruction. The primary school methods of Miss Cropsy was another point of importance. The fact that the supervising force and the teachers were in perfect accord with one another was another reason for the excellence of the system. Other points made were the studiousness among the teachers, splendid foundation laid in the elementary schools, practical course of study and elimination of politics from the schools. Another point of efficiency was the fact that the Board consisted of a small number of men of high character. All employees, from the Superintendent down, held their offices on merit only, and this has been in vogue for several years.



PROPOSED QUAYS ALONG THE POTOMAC AND ANACOSTIA, WASHINGTON, D. C.

POLES AND WIRES IN ROCHESTER

A committee of Rochester (N. Y.) officials, composed of Commissioner McClintock, City Engineer Fisher and an electrical expert have returned from their trip to the East where they went to study how the cities there treated the question of poles and wires in the streets. They found that Boston, Hartford, and New Haven have put most of the wires underground, especially in the business portions of the city. In Boston four years ago the streets were filled with poles and wires of all kinds, but now only such poles are erected as support the electric lights and the wires of the trolley lines. In 1890 a law was passed instituting the Commission of Wires, the head of which had control of all outside electrical wires and poles. Each company was obliged to affix to each wire at the point of support, a tag or mark to identify the wire, and all abandoned wires were removed at the expense of the company. In 1894 the Commission of Wires started to remove all poles, wires, etc., from the streets. He has power to make any company place its wires underground, but cannot refuse a permit for a company to place a conduit in any street. The Commissioner has also the power to prohibit the turning on of any current through the streets until he is satisfied that the wires are properly insulated. The Rochester committee found that in New England the telephone wires were not commonly distributed from poles, as in Rochester, but small conduits ran from large conduits in the streets under the sidewalk, and from these small conduits are taken the wires which serve the houses adjacent. The committee reported to the mayor the following conclusions: (1) A city electrician should be appointed for the city, to take charge of all electric wires inside and outside of buildings; (2) all poles and wires, except trolley poles and lamp posts, should be placed in conduits in the business portions of the city; (3) no wires attached to tops of buildings should cross the street; (4) no shade trees should be mutilated for the purpose of erecting wires; (5) no wire from a distributing pole should be carried across the street; (6) in certain streets where trees, shrubbery, grass, etc., are maintained in a park condition, there should not be any wires or poles except lamp posts.

REMOVAL OF SNOW IN WESTMINSTER

THE report of Mr. J. W. Bradley, City Engineer of Westminster, England, on the removal of the snow of that city, contains some very interesting statements. The city of Westminster has one hundred miles of streets with an area of over 3,000,000 square yards, and taking into consideration the snow that would fall from the roofs and be shovelled into the streets from the courtyards, etc., the average snow fall amounts to about 4,500,000 square yards. It appears that rock salt is extensively used to melt snow, and the last consignment of this was paid for at the rate of $6.00 per ton.

While the city department employs regular men for removing the snow, it has been found necessary to engage casual labor in large quantities according to the extent of the snow fall. The best system for keeping track of this extra labor has been found to be by using numbered brass checks, each district having a different shape, round, square, etc. Every foreman in charge of a gang of laborers would have a certain quantity of these checks given him, and would also keep on sheets of paper the time of engagement of the number of men corresponding to the number of checks that were given him. When the men had finished their day's work these checks were given them and they would exchange these at the Works Department for their pay. The men have to be paid at the end of every shift, and inasmuch as snow falls might occur at any time when the banks were not doing business, it was found necessary to have the finance department keep on hand at least $2,000 so that the men might not have to wait for their pay.

A three inch fall of snow in Westminster means about 3,000 tons which has to be disposed of by dumping on barges at the wharfs, by depositing the clean snow in the river or sewers, or else by salting and flushing away by means of water from the street hydrants. The number of horses that is required to deal with such a quantity of snow ranges from 800 to 1,000, and as the corporation does not own more than 200 or 300 wagons, it was found necessary to make arrangements with contractors to have at all times wagons ready for the removal of snow. The prices for such service, offered by some sixty firms,

were as follows: For the supply of horses, carts and men to be ready at any time for carting snow, $5.00 for each horse, cart and man; the men to be paid ten shillings for each ten hours work. The contractors, as soon as the snow "commenced to remain on the ground" send their team labor to the depots, but in order to be sure that they are on time, division superintendents send a special messenger to the different stables and note the time that the wagons arrive at the city depots. This is necessary, as under the agreement they must not be more than four hours late after receipt of the notice. In case the contractor is more than four hours late in supplying the entire number of horses, carts and men that is stipulated in the agreement, he forfeits his entire retaining fee. Each cart contains, conspicuously displayed, a notice stating that it is for snow removal of the city, and giving its proper number. In addition, each carter is supplied with a book containing numbered tickets in duplicate, so as to check the number of loads of snow removed by his cart. The city workmen are under instructions to at once report themselves at their respective depots as soon as snow commences to fall, whether it be day or night.

PUBLIC LIGHTING IN WISCONSIN

DURING the last few weeks we have received from the city clerks the replies to our circular letters which were sent out for the purpose of gathering information with reference to costs of public and private lighting in the cities of the states. We desire in this connection to express our appreciation of the promptness and carefulness with which the various city clerks have given us this information. Few people are in a position to appreciate the constant demand made upon our city clerks by those persons who desire information upon the various questions concerning our cities, and while it is with reluctance that we make this request, it is about the only means open for us for such information, and we hope that the results of this co-operation of the city clerks will fully compensate for the trouble which they have taken in assisting us.

About 125 letters were sent out and about ninety replies were received so that the information covers quite fully the whole state. The cities of all sizes sent in their replies. In some of the smaller cities the lighting is more primitive—consisting of oil lamp posts located at the street corners, but on the other hand some of the smallest villages possess a very complete system of public and private lighting. The main interest in this inquiry centers in the question of public and private lighting. Our replies show that twenty-five cities possess public plants, the remainder being private, while Grand Rapids possesses a co-operative lighting system. The growth of public lighting has been marked in recent years. The public plants are as a rule confined to the smaller cities. The city council of Milwaukee has recently taken steps looking towards the construction of a public lighting plant and in other cities the agitation is quite pronounced, so that in the near future the list of public plants will doubtless be considerably increased.

From the point of view of economy, it is interesting to note whether the lighting and waterworks are operated from the same power plant. The returns show that only about twenty cities operate the two plants together. It is quite obvious that great economies may result from such operation. At least a duplication of power plant would be unnecessary. In most of our cities the pumping at night is very light, and the power can thus be applied to lighting which of course in the day time is unnecessary. By this interchangeable process great economy may be secured not only in the cost of ground, building and plant itself but also in the cost of operation. Some of our cities that are fortunately located near natural water power can secure their lighting at comparatively little expense, but the great majority of our cities are not so situated and they must either purchase their power from a private company operating this water power or else construct their own plants for the power of lighting within the city limits. These problems must be solved according to conditions and cannot be treated by hard and fast rules. In many of the cities the arc lights alone are used while in others the combination of arc, with gas and incandescent lights are found. Naturally the number of arc lights varies with the size of the city and the degree to which they are combined with other lights. In our larger cities considerable use is made of the arc lights. According to our returns Milwaukee possesses 1,700, Oshkosh 269, La Crosse 219, Racine 225, Janesville 198, Kenosha 120 and Madison 149. An examination of the number of arcs in the various cities show that there is no relation existing between the number of lamps and the population. In fact some of the cities of less size have more arc lights than other cities of greater population.

There is also great variety with reference to cost of light per arc. This varies in the cities from $85 in Chippewa Falls to $30 in Hudson. The city of Hudson owns its own plant and doubtless its method of computing costs is somewhat different from the other plants, while on the other hand it has been in operation but a short period. There are a great many methods of fixing the rates for lighting. In some of our cities a flat rate is paid each year for each arc light while in others it is paid by the month, and in some of the cities there are all-night and twelve o'clock lights so that it is extremely difficult to make any comparison or a review of the statistics which we have collected. The cost of lighting of the cities owning their own plants is materially reduced, but it should be said in this connection that the methods of computing the cost of public light is different from that of private lighting, and in many cases the material reduction of cost obtained by the public plants is due to the fact that as a rule no allowance is made for the depreciation of the plant; but it must be admitted that the community pays the bill in any case. And although the private company sets up a claim that a large part of their profits are put aside for plant depreciation, still we cannot escape the fact that this comes from the earnings of the community. A city is not compelled to use its funds in this way. Its reserve fund is the wealth of the community. Its enterprises are not designed to declare dividends. Its dividends are services well and economically done.—*The Municipality.*

A FAIR RATE FOR TELEPHONE SERVICE

THE city of Fort Worth, Texas, has granted a franchise to a company for the establishment of a telephone system. The franchise contains the following provisions: All poles, wires, conduits, etc., must conform to the ordinances of the city; all work upon the system must be of the most improved pattern, and only the best material must be used; the system must be kept supplied with the most approved and up-to-date equipment and all material and work must be approved by the city electrician. All conduits, poles, etc., shall be controlled by the city, which shall have the right to require a change at any time it sees fit. Within the fire limits no poles shall be erected except those necessary for distributing wires from underground conduits. The city of Fort Worth shall at any time have the right to require the removal of all wires or poles from any street and the placing of the wires in underground conduits.

The service rendered by the company must be of the highest grade, and the city electrician shall inspect such work from time to time and report his recommendations to the Council which shall have the power to compel the company to make such improvements as are reasonably required to bring the service to a high grade.

The franchise shall run for a period of twenty-five years. During this period so long as the bona fide subscribers do not exceed 1,000, the charges for a single line residence service shall not be more than $1.75 per 'phone per month, and for business service shall not exceed $2.75 per 'phone per month. When the number of subscribers shall be greater than one thousand and less than two thousand, residence service shall not exceed $2.00 per month, and business service not more than $3.00 per month. When the number of subscribers exceeds 2,000, the charge for residence service shall not exceed $2.25 per month, and the charge for business service, not more than $3.25 per month.

In return for the privileges granted the company, said company for each of the first ten years of the franchise shall pay 2 per cent. of the total annual receipts and earnings, from bona fide subscriptions. For each of the succeeding five years, 3 per cent. of the total annual receipts and earnings shall be paid into the city treasury. For every year after this time, 3½ per cent. of the total receipts must be paid the city.

STATISTICS FOR TEN LARGE CITIES

CONTROLLER F. C. BLADES of the city of Detroit, Mich., has issued a pamphlet containing comparative statistics of ten cities in the United States having a population of 200,000 to 400,000. Public works, schools, fire protection, lighting, health, etc., have a place among the numerous subjects taken up and Mr. Blades and Deputy-Controller Howard C. Beck are to be congratulated on their work. While the statistics were compiled primarily for the use of the Council of Detroit, Mr. Blades states that he will be pleased to send a copy to any reader of the MUNICIPAL JOURNAL AND ENGINEER who desires it. The two tables that follow were compiled from figures given in the pamphlet:

GARBAGE COLLECTION

	"Garbage" includes	How collected	How treated	No. tons collected	Cost, collection and disposal	Fine for non-collection.
Buffalo, N. Y.	c, k	*	M	25,443	¶	$2
Cincinnati, O	v, k	*	R	.....	$76,600	N
Cleveland, O.	a, v, c	*	R	30,320	69,400	N
Detroit, Mich.	r, a, v, c	*	R	18,497	51,500	$2
Jersey City, N. J.	g, h	*	D	14,600	20,000	...
Louisville, Ky	h, k, &c	‡	D	.....	‖	N
Milwaukee, Wis.	k, c	†	C	30,000	72,000	N
Minneapolis, Minn.	k	‡	C	.....	17,000	...
Newark, N. J.	h, g, r	*	D	30,000	71,000	$5
Pittsburg, Pa.	k	*	R	35,000	90,000	N

r. Refuse. a. Animal matter. v. Vegetable matter. k. Kitchen refuse. c. Carrion. g. Garbage. h. ashes. * Contract. † Health Dept. ‡ City force. R. Reduction. C. Cremation. D. Dumped. M. Merz system. ¶ Collection, $113,668, disposal, $15,840. ‖ Expense included in street cleaning. N. None.

TELEPHONE RATES, CAR FARES AND REVENUES

	Telephone Rates		Street Railway Fares	Revenue from Franchises	
	Business	Residence		Source	Amount
Buffalo, N. Y.	m $36	m $36	t .05	Sr	$51,573.69
Cincinnati, O.	s 100	s 60	t .05	Sr, E	150,821.00
Cleveland, O.	*36-84	24-60	¶ .05	G	75,632.07
Detroit, Mich.	50-72	†36-42	t .05 a	Sr, D	28,124.50
Jersey City, N. J.	.....	.....	....	R, Sr	2,327.83
Louisville, Ky.	72-96	12-48	.05	R, E	10,250 00
Milwaukee, Wis.	‡ u 96	‡ u 60	‖ .05	None	.....
Minneapolis, Minn.	L 84, T 48	L 64, T 30	ts .05	None	.....
Newark, N. J.	L 66-150 l	L 30-75 l	t .05	.....	.....
Pittsburg, Pa.	*84	*60	.05	Sr.	18,000.00

m. Min., 600 messages for bus., 400 for res. s. Single line, 5 year contract. * Bell. In Cleveland, Cuyahoga, $48 for bus., $36 for res.; Pittsburg, P. & A., $48 for bus., $36 for res. † Limited service or 2 to 4 party lines, lower rates. u. Unlimited service. ‡ Limited service, lower rates. L. Long distance. T. Twin city. l, Local., $48 for bus., $36 for res. t. One transfer. ts. Transfers. ¶ 11 tickets for 50 cts. a. 8 tickets for 25 cts. all lines, limited hours, morning and evening; certain lines, 8 tickets for 25 cts. all day until 8 p. m. ‖ 6 to 8 a. m. and 5 to 7 p. m., 4c. ticket. R. Railroad. Sr. Street railway. E. Electric light company. G. Gas company, 6½ per cent. D. Union Depot Co.

HOW TO DESTROY THE ELM TREE BEETLE

ONE of the many enemies with which the superintendents of parks have to contend is the elm tree beetle, and the problem of its extermination was made the subject of a special bulletin issued by the New England Association of Park Superintendents. Many superintendents of parks contributed to this bulletin their experience with the beetle and the methods they devised to exterminate it. Mr. Charles E. Keith, Superintendent of Parks, Bridgeport, Conn., described his method as follows: "The trunk of the elm tree is scraped and when the beetles fall to the ground they can be killed." He found that the larvae that fell to the ground were not transformed into beetles. Other superintendents concurred with Mr. Keith in this method, but some of the park authorities use a stiff brush with which they apply an emulsion of kerosene to the bark and limbs of the trees. In Worcester this was found to be more efficient than spraying the trees, although the spray is probably most used of any method.

City Forester Clarke of Northampton, Mass., after an experience of five years in fighting the pest, found that it could be destroyed in only one way, which was by spraying the foliage, as soon as the leaves were fully developed in the spring, with arsenate of lead. Glucose is added to this emulsion for the purpose of making it adhere to the leaves so that rains will not wash it off. The arsenate of lead and glucose is mixed with water in the proportion of three pounds to five gallons and it is stated that this does not injure the most delicate foliage. The objection to the use of paris green is that it is liable to kill the leaves, while not so effective in destroying the beetles and worms. The practice of placing paper and metal bands about the trees is not recommended by Mr. Clarke, because thousands of beetles find safe corners behind these bands.

There are many pumps that are used to spray the solution over the trees, and each superintendent has a favorite one. Mr. Clarke describes some kinds of pumps, such as the large hand sprayer, which can be worked by one man and will spray very high trees. When there are a large number of trees to be treated he recommends a two or three horse power boiler and duplex steam power. He warns those having charge of the work to be careful to spray the under side of the leaf, as well as the upper, because the eggs are attached to the under side, and the worms begin to feed there as soon as they are hatched out. Early spring is recommended and trees should be sprayed at the top first. Another method of spraying is by the use of poles ten feet in length, which have on one end an attachment for a nozzle.

In July, Mr. Clarke says that the worms and half formed beetles begin to go down to the foot of the trees, and that if boiling water is sprinkled on them there they will cease to come down. The beetles should also be brushed from the trunk of the tree and scalded as they fall on the ground.

The experience of most of the other park commissioners has been similar to that of Mr. Clarke, and their recommendations are about the same. Mr. Capron, Superintendent of Parks, Holyoke, Mass., recommends the use of paris green. He makes a solution by adding one pound of paris green and one or two pounds of slacked lime to 180 gallons of water. He states that if this is properly used there is no danger of burning the foliage, and that if a man knows his business he will stop when the solution begins to drip from the foliage. Superintendent Fitts of the parks of Providence, R. I., calls attention to the fact that while the trunks of the trees may be thoroughly scraped, people do not realize that the bark removed should be destroyed in some effectual manner. In many instances the scrapings are merely thrown upon the ground.

While many of the superintendents of parks of New England have had no experience with this elm tree beetle, those who had been fighting the pest were almost unanimous in recommending the above methods of procedure, and all concurred in the statement that great care and thoroughness in doing the work were absolutely essential if it was desired to eradicate the pest once for all.

BEST SYSTEM OF STOKING TO PREVENT SMOKE

MR. WILLIAM NICHOLSON, Chief Smoke Inspector of Sheffield, England, says that the most successful and scientific method of stoking consists in firing lightly and often. By this system the coal is consumed in the furnace and not sent up the chimney in the form of black smoke, which is not only a waste of fuel but also a public nuisance. This light firing can best be done on the alternate side firing principle. Thus the stoker fires the right hand side of all the furnaces first. In each of the furnaces the gases given off will curl around from the right to the left hand side, which has not been fired, and which is incandescent and consequently consumes the gases. The left hand side of the furnaces is then treated and the operation reversed. He says that this is unquestionably the best way of firing furnaces for economy, rapid increase of temperature and loss of smoke. The only objection lies in the fact that it causes just double the amount of work for the stoker. He has to open his door twice instead of once, as the firings are light they burn very quickly, and thus he has to fire twice as often as if he fired right across the furnace with a heavier load. The best way to arrive at the goal of practical smoke abatement is to construct boilers and furnaces on the most modern principles and attach to them the best apparatus suitable to every condition of work, and to see that they are worked in the manner above outlined.

AN EXCELLENT OMAHA CHARITY

ONE of the most important and interesting charities of Omaha is the Child Saving Institute. The name is a descriptive one. The institute saves children. If a little one is abandoned by worthless parents, cruelly treated by heartless ones, orphaned and unprovided for, it can find an asylum here, where it will receive every attention childhood requires. Agents of the institute are constantly on the outlook for children who need its aid, and are even ready to take them away by law from parents who for any reason are unfitted to care for them.

The amount of good which the institute is accomplishing is shown by the following statistics from its report for the year ending October 31, 1901:

Number on hand November 1, 1900	23
Number received during year	181
Number returned to parents	79
Number provided with homes	90
Number died, all under six months old	11
Number on hand at present	24

That the people of Omaha appreciate the work of the institute is shown by the interest which they have taken in the commodious new building erected during the past summer, which insures the permanency of the institute among the city's charitable institutions. The new home contains a play room, nursery, dining rooms, dormitories, bath rooms and every convenience and luxury found in the best homes of Omaha. A corps of physicians, and professional nurses, are in constant attendance, while the services of skilled oculists, aurists, and dentists may be had when needed.

The last report of the trustees contains the stories of some of the children whom they have cared for during the past year. Many who have been born in squalor and poverty have been taken into homes of refinement and affluence. Indeed, the avowed object of those in charge is to bring such children into homes where they are wanted and to afford them only temporary shelter at the institute. The demand for children who may be unconditionally adopted is, according to the officers of the institute, greater than the supply. The following well-known names appear among the patrons of this excellent charity:

President, Geo. F. Bidwell; vice-president, Guy C. Barton; secretary, J. Frank Carpenter; treasurer, C. W. Seymour; superintendent, A. W. Clark; assistant superintendent, J. S. Leavitt; board of trustees, officers, ex officio, E. A. Cudahy, C. W. Lyman, H. J. Penfield.

HOUSTON SEWAGE DISPOSAL PLANT

THE City of Houston, Texas, has long been troubled with a nuisance caused by the dumping of sewage into the bay, and the project of obtaining deep water at Houston, has been seriously tampered by this way of disposing of the sewage. It was this desire for deep water, however, that is mainly responsible for the vigorous action taken by the city to abate this sewage nuisance. The Government engineer's report on the deep water project made the removal of the crude sewage in the bay a condition precedent to any action on the part of the Government toward giving Houston deep water. In the summer of 1899 the question was submitted to the people and it was voted that plans and estimates be prepared for a sewage disposal plant.

The improvements just completed consist in the construction of a system of intercepting sewers, varying in size from eighteen to forty-two inches. These sewers will tap the various laterals which lead directly to the bay and will carry the sewage to a pumping station which is situated in about the geographical centre of the town; thence it is pumped to the disposal works which are located four and one half miles below the city.

The sewage enters a tank at the pumping station, fifty feet long, twenty feet wide and ten feet deep. This tank is constructed of concrete and steel. The pumping machinery consists of one ten inch centrifugal pump and one of twelve inches. The capacity of the small pump is 3,000,000 gallons per day, while that of the larger is twice as much.

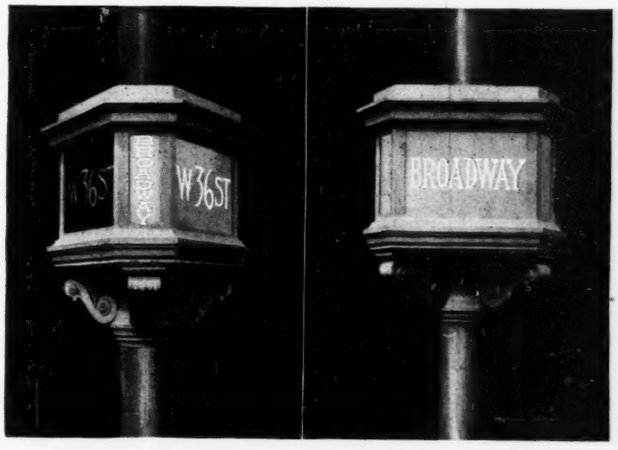
From the pumping station the sewage is forced through a twenty-four inch pipe to the disposal works, where it is led to elevated beds composed of three layers of coarse filtering material. The lowest course of this material consists of four inches of gravel; above this is laid six inches of broken stone, on top of which is eight inches of coke. The size of the particles is such that the largest will pass through a screen of one inch mesh.

After being distributed over the coke beds the sewage passes through the filtering material to under drains. The heavier particles of the sewage are retained upon the surface of the coke where it dries after a period of a day or two, and can be easily raked or scraped off. From the under drains the rest of the sewage is distributed over sand beds. These beds are also underdrained, and the purified effluent passes out into a long canal whence it finds its way to the river. The efficiency of this filtering plant is such, it is said, that the attendant has no hesitancy in drinking the effluent.

The entire cost of the plant, exclusive of the land, is approximately $280,000, and it is estimated that the total annual expenses for operation will amount to about $12,000 for fuel and labor. This plant is one of the largest that has ever been constructed in the country, and Houston is the first city in the South to adopt a modern method of sewage disposal.

STREET SIGNS FOR GREATER NEW YORK

AFTER a long fight, President Jacob A. Cantor, of the Borough of Manhattan, has finally succeeded in securing an appropriation for the installation of the model street sign. In the near future New York City will not deserve the criticism which has been so justly made in the past, of having the largest number of unmarked streets of any



THE NEW STREET SIGN FOR GREATER NEW YORK

city in the country in proportion to its size. The design for the new street signs is the product of the Municipal Art Society of New York. At a recent meeting of the Board of Estimate, $58,000 was appropriated for installing these street signs in Greater New York, $40,000 to be expended in Manhattan, and $18,000 in the Borough of Brooklyn.

COST OF PAVING IN IOWA

SOME figures of interest respecting the cost of street paving in Iowa cities have been collated by the Des Moines board of public works. The following table shows the number of miles of paving in the cities named:

	MILES.	POPULATION.
Des Moines	56.	62,139
Dubuque	4.72	36,254
Davenport	23.	35,254
Sioux City	4.40	33,111
Council Bluffs	11.	25,802
Cedar Rapids	18.61	25,656
Burlington	11.93	23,201
Clinton	13.	22,689
Ottumwa	6.5	18,197

Keokuk	1.6	14,641
Muscatine	No report.	14,073
Waterloo	5.	12,162
Fort Dodge	1.20	12,107
Marshalltown	6.69	11,544
Fort Madison	No report.	9,278
Oskaloosa	9.	9,212
Boone	1.76	8,880
Iowa City	1.82	7,987
Mason City	.91	6,746
Charles City	.21	4,227
Newton	.75	3,682
Albia	1.	3,147

The greater portion of this paving is brick. Asphalt is found in Des Moines, where there are 29,238 square yards; Sioux City, 144,794 square yards; Ottumwa, three-fourths of a mile; Cedar Rapids, two and one-half miles. Dubuque has eighty-eight miles of macadam, leading all cities of the state, and while it has a small amount of brick paving, there are no end of good roads leading to the city and through all of the principal sections. Sioux City has 8,215 square yards of macadam; Cedar Rapids, 32,500 square yards, and Burlington, 7,591 square yards, while Clinton has 7.37 miles, Ottumwa one-half a mile and Keokuk 2.35 miles. Sioux City has 212,437 square yards of block paving and 48,949 of block stone for the business district. Council Bluffs has 152,500 square yards of blocks (wooden), and 73,200 yards of granite blocks. Burlington has 1.49 miles of stone block paving.

In Des Moines brick paving cost on an average during the past season, according to figures taken from the contracts, which the board has let, $1.65. In Davenport brick paving cost $1.30, but it is claimed that the specifications are not so rigid as those required by the Des Moines board. For two course of brick Sioux City paid $1.71 to $1.83, while Council Bluffs and Cedar Rapids had some work done as low as $1.25, and from that to $1.80. Other cities have figures as follows: Burlington, $1.34 to $1.84; Clinton, $1.20 to $1.36; Ottumwa, $1.40; Keokuk, $1.25 to $1.68; Waterloo, $1.20 to $2.10; Marshalltown, $1.15 to $1.80; Boone, $1.14 to $1.69; Mason City, $1.65 to $1.96; Charles City, $1.26; Newton, $1.43 to $1.53.

For asphalt paving Des Moines paid an average of $1.98. Sioux City paid $2.56 and Ottumwa (native asphalt), $1.58. For macadam Dubuque pays an average of 55 cents per square yard; Council Bluffs, 49.33 cents; Burlington, 72 cents, and Keokuk, 43 to 68 cents. The last wood block laid in Sioux City cost $1.33 per square yard and the last at Council Bluffs cost $1.40. Burlington has paid for limestone blocks $1.25 and for granite blocks $2.75. Council Bluffs pays for the best granite blocks $3.48.—*Midland Municipalities.*

SPRINKLING THE STREETS IN PARIS

Engineering, in reproducing an article by M. E. Bret, from *Le Gènie Civil*, states that the area of streets watered in the city of Paris, France, is equal to 10,169,281 square yards. In addition to this must be added 1,948,000 square yards for the graveled side avenues, Champs Elysees and elsewhere. Of the entire area 6,191,000 square yards are paved with stone, 1,716,000 with wood, and 437,344 square yards with asphalt. The remaining streets are macadamized. About 500 water carts sprinkle half of the total area. These carts hold from 220 to 309 gallons of water, the largest being used in level areas only. The average cart holds 265 gallons. Their weight is 1,500 pounds each empty, and cost about $240 each. The spray tubes are made of copper, thus preventing any rust of the tubes. A certain number of small hand watering carts are also used in special places.

The other half of the streets are watered by means of 1,400 "chariots d'arrosement," which are substituted for rubber or leather hose. The common type of these "chariots" consists of four pieces of iron pipe, six feet eight inches long by one and three-eighths inches in diameter, and connected together by a twelve-inch length of leather or rubber tubing. Each pipe is mounted on casters. One end of the "chariot" is coupled to the stand-pipe and the other end to a three-foot, four-inch length of iron pipe beyond which again comes the nozzle. These "chariots" cost about $12, and are capable of watering an area within a radius of 60 feet of the stand-pipe. The stand-pipes themselves are placed about 100 feet apart, there being in the city about 7,200. They are placed beneath the foot-paths and are fitted with two valves, viz.: the service valve for surface and the stop valve about three feet below. Closing the latter opens the drain cock which lets the water in the pipe and valve above it into the sewer, thus preventing damage from freezing. These stand-pipes cost about $21 when in place. With one "chariot" a man can thoroughly wash about 2,600 square yards per hour.

River water is used extensively for street watering in Paris and costs about three and one-half cents per thousand gallons, which suffices for cleaning 5,400 square yards. The rate of wages averages $1.04 per day; therefore the cost of washing streets on this system, including maintenance and depreciation of plant and cost of supervision, amounts to seven and one-half cents per thousand square yards. With the water cart system the cost is less, being five cents per thousand square yards, but the work is not so thoroughly done. The difference in the cost lies in the "chariots," because a water cart can cover 3,470 square yards and a less intelligent man can be employed as driver than is needed for the "chariot" system.

During April, May and September the principal streets are watered twice a day, the other streets once. During June, July and August the main streets are watered three times a day if paved, and three or four times if macadamized, while the other streets are watered twice if paved and two or three times if macadamized. In March and November a certain amount of watering is done to lay the dust; the Champs Elysees and Bois de Boulogne are watered five times a day. On an average 1,000 square yards of the macadam streets require 340 gallons of water in the spring and autumn and 475 gallons in the summer; wood and asphalt, 160 in spring and autumn and 265 in the summer; stone paving, 130 in the spring and autumn and 210 in the summer.

MUNICIPAL EMPLOYMENT OFFICES IN EUROPE

THE issue of April 25th of the *Municipal Journal* of London, contains an interesting article by Mr. Eric Givskov, a Danish lawyer, on the municipal registry offices. He says that the idea of establishing municipal registry offices originated in the south of Germany, where, about seven years ago the first office was opened in Munich. The idea spread rapidly over nearly the whole of Germany and Scandinavia, but as the office at Copenhagen is the best of all, he gives a short description of this bureau.

The governing body consists of eleven members, made up of a burgomaster, two members of the Council, four members elected by the Danish Employers' Association, and four by the Danish Co-operating Trades Union, thus providing an equal representation of employers and employes. The manager has direct charge of the bureau, and he is assisted by a corps of male clerks for the men, and female clerks for the women employes. The system of registering the people in Copenhagen is by tickets. The tickets for those desiring employment are filled in by the clerk and gives the name, residence, place and date of birth, the employment wanted, former employment, and whether or not the applicant is married, the number of children at home, how long out of work, etc. Similar tickets, with necessary alterations, are used for the employers. If no suitable situation is immediately found for the applicant he is given a ticket which is available for a week and can be renewed weekly. If he at any time obtains employment he must return the ticket to the office, and as his ticket is printed on the reverse of a postal card, this costs him nothing. Different colors are used for tickets for the men and for the women. The employers who report that they have a suitable situation vacant, are given tickets, and when any one applies for the situation the employer is required to return his ticket to the office filled in with information as to whether the applicant was engaged or not, or if the situation be already filled, to state the name of the one engaged. The reason for returning these tickets to the office is to enable the employes there to ascertain whether an employer is satisfied with the one sent him, and thus save the trouble of sending a second person.

The municipal registry in Copenhagen has been a great success. The first six months of its existence over 6,000 of the 7,000 employers who applied were supplied with servants and over half of the number of employes who made application, were provided with situations.

THE FIRE FIGHTERS OF THE TERRACE CITY

Small but Effective Department—Has a Drill School—Gamewell Alarm System Used—Needs of the Department

By Our Special Correspondent

CHIEF JAS. J. MULCAHEY

To change from volunteer service to that of a paid department means the placing of a city's safety 60 per cent. nearer immunity from loss by fire. Slowly but surely the cities of the country are realizing the inefficiency of the volunteer fire department and, as the size of the city warrants the expense of a regular department, the change is made. It is not that the cities are ungrateful for the service rendered by their volunteers or that their work is not thoroughly appreciated, but the very nature of the service works against its effectiveness. It is obvious that the discipline and training that make a paid department cannot be applied to those that have not the time to give to the work.

The needs of fire protection for a city of 50,000 inhabitants in which are many large factories employing thousands of hands are greater than can be served by volunteers, however efficient. On this account the city of Yonkers, N. Y., dismissed its volunteers with thanks for their past good work and put in their place a small, but strong force of men who were to give their whole time to learning to fight fires.

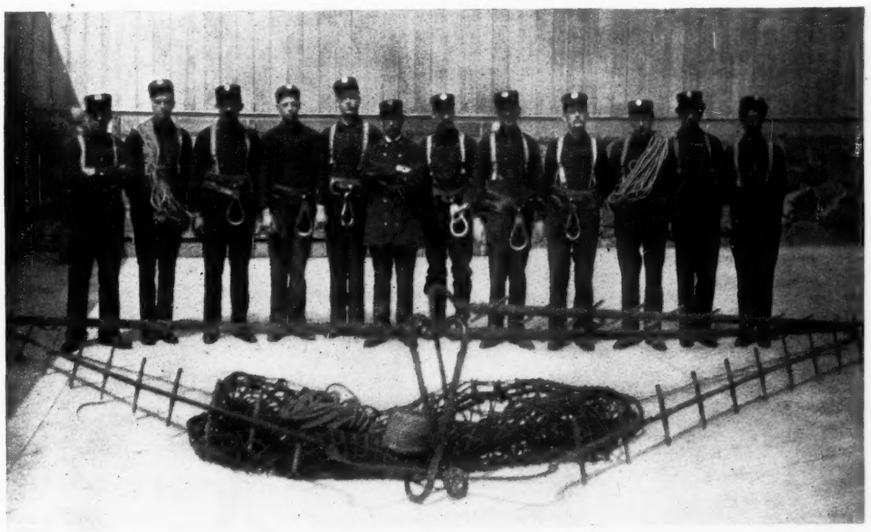
Yonkers is situated on a series of terraces that rise one above the other from the shores of the Hudson river and therefore its streets are very hilly, making it difficult work for fire apparatus to get about. In the heart of the town are a number of large manufactories and 90 per cent. of the buildings, both in the business and residential sections are of wood. Consequently the risks are very great. "It is an ill wind that blows nobody good," however, and while Yonker's hills make rapid travelling difficult, they also make possible such pressure of water in the hydrants that steam fire engines are not needed and the city is saved this large expense.

In 1896 the present Chief, James J. Mulcahey, was authorized by the Board of Fire Commissioners to form a paid department. Chief Mulcahey had been a member of the volunteer force since 1876 and had served as chief from 1882 to 1884 and from 1892 to 1894. Hard work and much discouragement were his lot at first. Popular sentiment was with the volunteers and was doubtful of the success of the new venture. The new department, however, has won its way into popular favor just as it was bound to do when it had an opportunity to show the people how well it could handle fires. The volunteer system was more spectacular, but the regulars do the work.

Much trouble was experienced at first with the private fire brigades maintained by the factories. On the occasion of fires in these places admittance was refused the regular firemen, but when the private brigades proved inadequate and the regulars were called in to assist, they soon had the fires under control and it was not long before the private brigades were abolished and the doors kept open for the regulars.

ONE OF THE MODERN ENGINE HOUSES

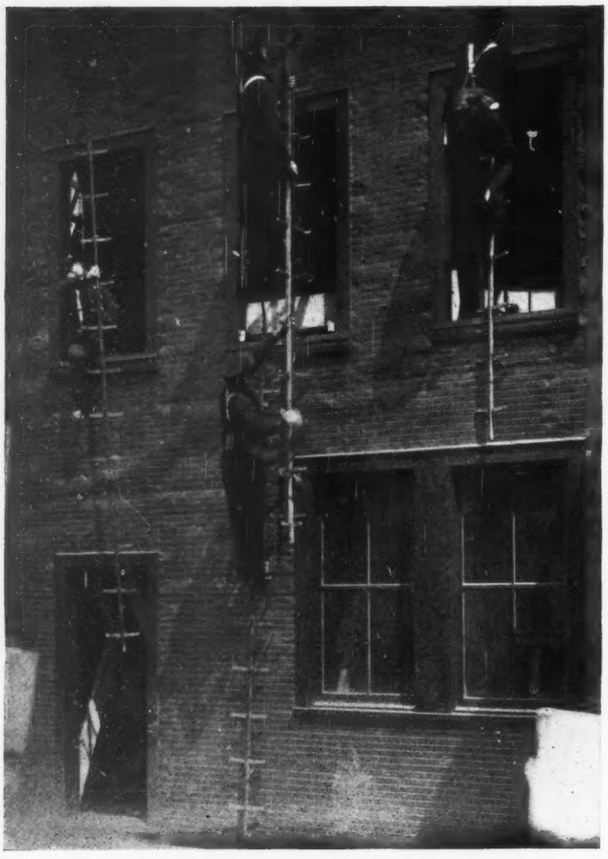
At present there are seven fully equipped companies, located in five houses in different parts of the city. Headquarters, which is with Engine Company No. 1, and one or two of the other houses, are old volunteer stations, but are being or have been entirely renovated. The other houses are new and have been built in the best possible manner, costing about $30,000 each. One house is now being erected on Park Hill. The men are indeed fortunate in having such beautiful quarters as these new houses afford. The dormitories are large, light and airy. There are shower-baths, lounging rooms and private rooms for the captains and lieutenants. The upper story of one of the new engine houses makes one think of a Queen Anne's cottage, so tasteful is the architecture and the arrangement of the rooms. It must be a pleasure for the men to live there. In other houses the situation is not so pleasant, but the contemplated improvements will make it much more agreeable.



CHIEF MULCAHEY AND A CLASS IN THE DRILL SCHOOL

The men themselves are a hearty set of young fellows who show their training and discipline in their looks and actions. The splendid condition of the apparatus shows that they take pride in their work. There are forty-two men in the uniformed force, composed of the Chief, nine Captains, four lieutenants and twenty-eight firemen.

The apparatus consists of a Hayes truck, built by the La France Engine Company of Elmira, N. Y., a Gleason and Bailey truck made by the International Fire Engine Company of Seneca Falls, N. Y., two single-tank combination chem-



PRACTICE WITH THE SCALING LADDER

ical engines and hose wagons furnished by the Chicago Fire Extinguishing Mfg. Co., and three double-tank Holloway chemical engines and hose wagons. The double-tank engines hold thirty-five gallons per tank and the single tank engines fifty. Each wagon is equipped with two or three way Eastman deluge sets. There are also a hose wagon and a truck held in reserve. This latter was purchased for a volunteer company but, as it is of too light structure, it will be strengthened before being placed regularly in service. The two single-tank engines are located with the trucks in the heart of the city.

The department has twenty-seven horses, four of which are held in reserve. There are 12,700 feet of rubber hose in first-class condition, 3,000 feet in fair condition, 1,000 feet of canvas and rubberlined hose in good condition, and 1,400 feet in poor condition. In all 18,100. The hose is of various makes, all the canvas and rubber lined coming from the Eureka Fire Hose Company of New York, and the Gutta Percha and Rubber Mfg. Company furnishing some of the other. Besides the numerous Hoells pompier ladders and other small apparatus, there are three life nets of the Browder, Empire and Bonner patterns and an Almstead chemicalizer. While the Browder net is used for all life-saving purposes it does not appear in the illustration. Babcock, Diggs and underwriter extinguishers are among those in use.

GAMEWELL FIRE ALARM IN USE

The Gamewell Fire Alarm Telegraph renders its usual excellent service in transmitting alarms, the switchboard and storage battery being at headquarters. At present there are only four circuits for the eighty-six odd boxes and two for the gongs, but it is hoped to extend the system in the near future. The Chief makes all repairs, but these are few and far between for the system is of the best and does not get out of order readily.

The yearly appropriation for the department is about $75,000, which is usually consumed by the necessary expenses. The pay of the officers and men aggregate over $39,300. The Chief receives a salary of $2,000 per year, captains $1,200, lieutenants $1,100, and firemen $750 to $1,000.

THE DRILL SCHOOL

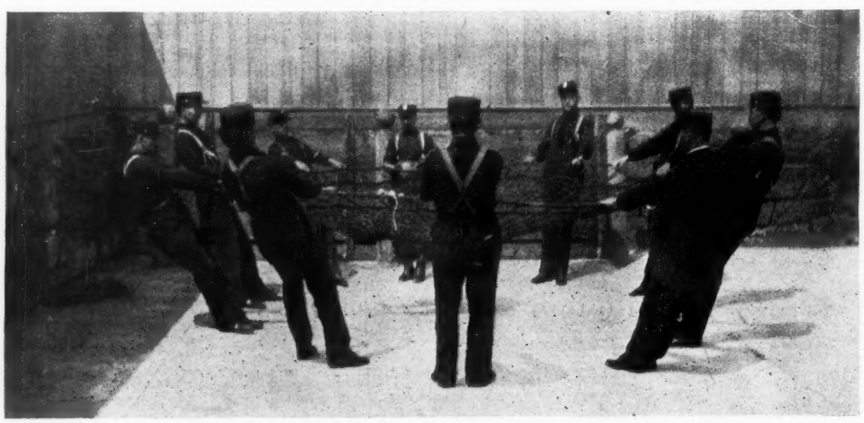
What is contributing the most to the effectiveness of the Yonker's department as well as to those in other cities, is the training school. This was placed in operation in March, 1899, but the structure itself was erected last December. It was built on the side of one of the truck houses of heavy timbers sheathed with tin. Here it is that the men learn to keep their heads when high in the air and to get their muscles in working order. The Chief takes the men in sections and puts them through a course of training once a day for four weeks. Many of the men at the first lesson are not able to climb above the first floor with the pompier ladders, but their confidence increases at each trial and soon they can go to the top of the structure as easily as the best. The Chief never urges a man to go above the first story at the first attempt and, in fact, forbids those doing so who are a trifle timid but who are anxious to overcome their feelings. He knows that they will get the knack of it in time and it is not necessary for them to take the risk of falling. The same course of procedure is gone through with in learning to jump into the life net. Starting from the first story, gradually the height is increased until confidence is gained. While it is taken for granted that accidents will happen not once in twenty times will one occur and then it is nothing worse than a broken arm or leg.

Numerous are the tricks that are learned in these lessons, all of which stand the men in good stead when in tight places in a burning building. The main object of it all, however, is to accustom the men to be cool when in perilous position high in the air and to acquire a facility for climbing.

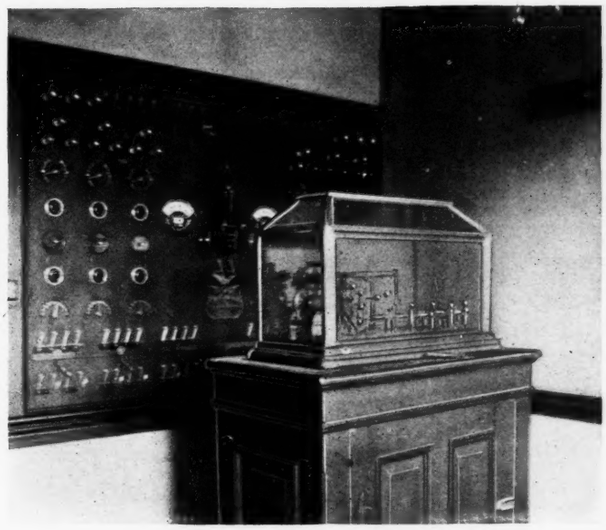
The Chief has high hopes of the effect this training will have on the efficiency of the department. It introduces elements that are encountered during a fire and affords an opportunity of correcting mistakes which might otherwise cause loss of fire. For instance the men are taught, when on a window sill and enveloped in smoke, to erect a rescuing ladder on the right hand side, consequently no valuable time is lost in feeling about in the smoke for the ladder's end. At first thought this would appear a very simple thing, but it is just these methodical ways that distinguish a trained from an untrained man. The Chief is very enthusiastic over the school and says that there is nothing like it to bring out all a man's good points and rapidly round him into shape as a good fireman.

NEEDS OF THE DEPARTMENT

While the present department is most effective, it is not yet large enough for the needs of the city. Many cities of smaller population have a much larger force. There are still several hundred volunteers left, but they are no longer called upon for assistance. Call men there are none and the Chief will not have them, for he says they are



HOLDING THE LIFE NET



THE FIRE ALARM SWITCHBOARD

such an uncertain quantity that they can not be depended on in emergencies. There are now but five, and with the one building, six fire stations and they are widely separated. There should be one chemical engine located in the outer portion of the city farthest up on the ridge and at least two in the business section near the factories. The reserve truck, when strengthened, will be placed in the northern part of the city and if a chemical engine be placed farther out toward the city's boundary line, the property on the Hill would be amply protected. Of course more apparatus will be needed in the near future. In buying only first-class apparatus of the latest pattern an excellent precedent has been established and this will doubtless be adhered to in the future. When new apparatus is purchased it will be located in the business sections and the old located in the ouplying districts. A new combination chemical engine hose wagon and hook and ladder truck will be in service on June 1 for the Park Hill district.

LARGER GAMEWELL SYSTEM NEEDED

The department is greatly in need of an enlarged alarm system. The present Gamewell system should be increased to from fourteen to sixteen circuits. An enlargement should be made of the system at headquarters so that, as future needs demand, additions could be made without altering the general plan. About $15,000 would be the cost of such a system, but the best is always the cheapest in the end, and money spent in the fire department in increasing its efficiency is a good investment.

POSSIBLE IMPROVEMENTS

If, in building future fire stations, it is so arranged that the horses are placed behind glass doors which open automatically at an alarm, the dust and smell from the stalls will be prevented from arising to the living quarters of the men. This arrangement obtains in Boston and is a great advantage while simple of operation. A further improvement could be made in the present houses if the floors were constructed of brick or composition stone. Two of the houses are already floored that way and are clean and cool. The wooden floors of two of the houses have been covered with rubber where the horses walk, but it would be cheaper and better in the end to lay floors of hard material.

The equipment of the apparatus with rubber tires has also been contemplated.

A new headquarters is badly needed. At present it is on the upper floor of one of the old volunteer houses, on the lower floor of which are a chemical and a hook and ladder company, and all are greatly crowded.

CHIEF AND COMMISSIONERS AGREE

There is one important fact that is aiding the Chief in building up a good department, and that is the perfect accord between him and the Board of Fire Commissioners. Mr. Michael J. Hayes is president of the Board. The other members are Messrs. John Warneck, James Kearns, Jr., and Charles Stahl. Anything that is reasonable and which the Chief feels is necessary to the system is forthcoming at his request. This last winter the heavy snows made it extremely difficult for the apparatus to get about, so the Chief requested sleighs on which to mount the engines and ladders. No time was wasted in obtaining an appropriation by the Council, and one of the Commissioners found what was wanted and purchased them on the spot. The time made by their use enabled the department to save three houses that would have been destroyed before the heavy equipment could have gotten through the deep snow.

YONKERS' LARGEST FIRE

Last year there were 192 alarms and a total loss by fire of $127,980.81. The most notable fire of the year was the Hendrick Hudson Hotel on Park Hill, an illustration of which is shown. It occurred on March 31, 1901, in the early morning and was a total loss. Before the alarm was sent in it was entirely wrapped in flames and nothing could be done except to keep the surrounding frame houses and the trees from catching.

YONKERS' BIGGEST FIRE

As stated before, Chief Mulcahey was a volunteer before building up the present paid department, and he has always treated the volunteers most courteously. It has been necessary for him to be firm in preventing any interference with his men, but as he is Chief *de jure* he means to be Chief *de facto*. His relation to the men is of the pleasantest and should be productive of the best results. He started with fifteen men, and during the six short years the department has been in existence he has worked hard for its developement, seldom leaving his post night or day. The best evidence of his faithful work is the efficiency of the department itself.

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MUNICIPAL ELECTRICIANS TO MEET.—The seventh annual convention of the International Association of Municipal Electricians will be held at Richmond, Va., Tuesday, Wednesday and Thursday, October 7, 8 and 9.

The following papers will be presented at the meeting:

"Municipal Inspection and Control," Walter M. Petty, Rutherford, N. J.

"Relation of Electrical Interests to Other Branches of the Municipality," Capt. William Brophy, Boston, Mass."

"The Telephone Service in Connection with Fire and Police Signal Systems," Jerry Murphy, Cleveland, O.

"Classifying of Records of Electrical Departments, and Standard Specifications for Supplies and Contracts," Edw. F. Schurig, Omaha, Neb.

"Report of Committee on Rules for Electrical Inspection and Control," especially with reference to the occupancy of streets, Morris W. Mead, Pittsburg, Pa.

"Joint Use of Conduits," Chas. F. Hopewell, Cambridge, Mass.

"Electrical Government in Small Cities," A. S. Hatch, Detroit, Mich.

In addition to the papers Mr. Hopewell of Cambridge, Mass., will give his "Illustrated Lecture on Fire and Police Telegraphs."

CHIEF CROKER A BUSY MAN

THE Fire Department of New York, if for nothing else than on account of its size, is of the greatest interest to all firemen in the country; consequently the chief of this immense department comes in for his share of the interest given the department.

"Chief Croker," says the *N. Y. Sun,* "is a man who places the interest of New York's Fire Department first, last and all the time, and his days, and sometimes nights are devoted to its service." He insists upon being on hand at every fire that amounts to anything and for that reason is on duty all the time at his headquarters.

As a rule the Chief rises about eight o'clock in the morning and rapidly dressing goes around the corner to his barber. Thence he visits a nearby restaurant for breakfast but at all times those at headquarters know just where to find him. If anything happens while he is away, headquarters can reach him by messenger or telephone without a moment's delay. If, for any reason, he should change his mind and go home for breakfast he must notify headquarters of this change from his usual routine, so that they can reach him at home if he should be needed. As soon as he finishes his breakfast, whether in a restaurant or at home, the Chief notifies the headquarters that he is on the way back.

CHIEF CROKER IN HIS NEW LOCOMOBILE

There is nothing in the course of a day's duties that does not give way to a call for fire. No matter to whom he may be talking whenever the call comes in, the Chief immediately leaves, even in the midst of a sentence. After the Chief has breakfasted he turns his attention to the immense amount of mail that is always awaiting him, and while he has help in answering letters, he makes it a point to see every communication that is addressed to him, sometimes dictating the reply himself, or indicating what should be sent in return.

The Chief has considerable power in the Department, for no fireman can be put on trial before the Commissioner unless the Chief recommends him for trial. Every complaint must first pass through his hands, so that all complaints, both large and small relative to the firemen, come to him.

While the Chief is not a scientific man or a scholar, he has proved himself considerable of an inventor. His most conspicuous invention is the searchlight for the use of engines. When he first came into office the fire underwriters were not kindly disposed toward him, and on his side Chief Croker could not see why the fire underwriters should be treated with any too great consideration. Both sides found out their mistake in a short time, and now are on the best of terms. The Chief found that when he left the fire underwriters out of the fire department interests, the insurance rates immediately went up and no end of trouble resulted. The fire underwriters soon got over their suspicions of the Chief, and now work with him hand in hand. When the Chief is at home—where he goes once in a while for supper—his automobile or wagon is always standing in front of the house, and as he has a fire alarm in the house, as well as a telephone, he is ready at a moment's notice to go to a fire. One of the qualities which goes toward making the Chief one of the most efficient in the country, is his knowledge of the buildings in the city. Whenever a large building is in process of construction in the city the Chief makes it his business to inspect it, so that he will know the dangers to be encountered should a fire ever break out there, and the character of the interior, and it is a surprising fact that the Chief never seems to forget the details of any building.

It is said that the Chief attends more fires than any other man in the department. While it is not his duty to attend every first alarm, still he very often does so. He often also attends a large number of two alarm fires, depending, of course, upon the section of the city in which it occurs. Three alarm fires he must attend according to the regulations, but it is seldom that the Chief waits for such an alarm. In response to three alarms he is prepared to go all over Brooklyn as well as up in the Bronx.

While the Chief is busy most of the day with department business, he still has time to talk to his friends, and it is from them that he learns what is going on in the department which would be otherwise impossible for him to find out. Among his friends he includes the many amateur firemen in the surrounding towns, such as Chief Bronson, of Larchmont, and Brentano, the publisher. While the Chief is not one to encourage confidences from his men he has so well mastered the art of learning things from his friends that he is not now the terror to all beholders that he was when he first took charge of the department.

TRENTON WANTS FIRE MAINS.—A successful test of the auxiliary high pressure water main construction of Philadelphia, has encouraged Chief Charles S. Allen, of the Trenton (N. J.) Fire Department, to work for a similar system for his city. At the test mentioned it was found that when the fire boats were connected with the mains, a pressure of 200 pounds to the square inch was developed. With both boats pumping, two three-inch streams were thrown to the tenth story of the building. When the mains were connected with one of the reservoirs, a pressure of sixty pounds to the square inch was obtained, and this was sufficient to force a two-inch stream a distance of about 200 feet. Chief Allen claims that it would take $32,000 to install the necessary mains for his city, and $11,000 to supply an engine capable of producing the required pressure, and that there would be no cost for maintenance.

CONVENTION OF INTERNATIONAL FIRE CHIEFS

Thirtieth Annual Meeting—Forecast of an Interesting Meeting—Many Exhibitors Will Be Present—Some Unique Pieces of Apparatus

The thirtieth annual convention of the International Association of Fire Engineers will be held at the Grand Central Palace, Lexington avenue and 43rd street, in the city of New York, September 16, 17, 18 and 19, and it is the intention of those having charge to make it the most successful affair of the kind ever held. The Grand Central Palace is admirably adapted for the purposes of the convention and for the exhibition of apparatus.

WOODHOUSE WATER TOWER

It has been decided that the second day of the convention will be given over to the exhibitors and the general public will not be admitted. Only chiefs and the exhibitors themselves will be allowed to see the tests except such as will be made in the streets surrounding the Palace. It is the purpose of the committee in charge to have all the exhibits of large apparatus given on Lexington avenue and 43rd street, which will be kept clear by the police. On all the other days of the convention the outside public will be allowed to enter after paying an entrance fee of 25 cents. Inasmuch as those that really wish to see the exhibits in the Palace would not stop at the small fee of 25 cents the necessity for keeping out the crowds has determined the committee to this course.

The Entertainment Committee desires especially to impress on the chiefs, who wish to attend the convention, to send in their applications with the annual dues of $5 to the secretary, Mr. H. A. Hills, Wyoming, O., at the earliest moment so that he may issue certificates to them to that effect. This course is urged for it will save time and the greatest confusion when the chiefs arrive in New York, inasmuch as no badges will be issued until these certificates of membership are shown.

Sessions will be held probably twice a day, and papers will be read that will be of great interest to fire fighters. As stated, one day will be given to exhibits and on another an excursion will be held.

The fact of the convention being held in New York City will be a factor in bringing a large number of chiefs from all over the country, and it is just the time for chiefs to get acquainted with one another and to see such assortment of fire apparatus as it would otherwise be difficult to have collected at any one place for the purposes of exhibiting their good qualities. The railroads have made special rates for transportation, the fare being one and one-third the regular excursion rate. Special rates have also been secured at all the hotels in the vicinity of the Grand Central Palace and accommodations can be secured all the way from 50 cents a day up. The Murray Hill Hotel has been selected as the headquarters of the Executive Committee, and this is but two blocks from the Grand Central Palace. Chief Matthew W. Bronson, of Larchmont, N. Y., is the Chairman of the Committee on Exhibits, with headquarters at the Grand Central Palace.

The Palace contains about 20,000 square feet of floor space that can be devoted to exhibitors and already 9,000 square feet, or nearly one-half of this space, have been applied for. Exhibitors are given until July 1 to make application for space. After that date the available room will be apportioned by the committee among the applicants. There will be no charge for space and the only expense attached will be connected with the exhibit itself. The elevators in the building are twenty-eight feet long and have a capacity of ten tons, so that any steam fire engine or other apparatus can be accommodated.

The following firms have already applied for space. MUNICIPAL JOURNAL AND ENGINEER, *Firemen's Herald, Fire and Water,* The C. G. Braxman Company, The W. J. Clark Company, The New Departure Manufacturing Company, T. F. Browder Company, The Little Giant Fire Extinguisher Company, A. P. Smith Manufacturing Company, Armstrong & Larsen, Monarch Fire Appliance Company, The India Rubber Company, Electric Contract Company, Eureka Fire Hose Company, The Sunlight Gas Machine Company, George C. Hale, Chicago Clothes Dryer Works, Samuel Eastman & Company, The Gamewell Fire Alarm Telegraph Company, Coffin Valve Company, Combination Ladder Company, Rex Fire Extinguisher Company, Boston Woven Hose and Rubber Company, Ajax Motor Vehicle Company, International Fire Engine Company, The Fyricide Manufacturing Company, and the Diggs Fire Extinguisher Company.

There will be several unique and interesting pieces of apparatus not seen at the last convention in Indianapolis and which have made their appearance on the market since that date. The Waterous Gasoline Engine is a most interesting piece of apparatus. It has been taking the small towns and villages by storm, for it is especially adapted for such places. Unlike other engines, it can be left in an unheated engine house all winter and there is no danger of it freezing, as is the case with chemical engines that have no one to look after them. Steam can be gotten up inside of three minutes after the gasoline is lighted and it will throw a powerful stream of water. Another advantage is that it is very light and can easily be drawn by hand.

WATEROUS GASOLINE FIRE ENGINE

Some sizes, however, are adapted to horse traction. Their simplicity renders unnecessary an expert engineer for their management. Another bit of apparatus of interest is the Woodhouse Fire Boat Water Tower which has been adopted by New York, Philadelphia, Buffalo, Baltimore and Detroit. It can be operated by one man and will throw a stream from two and one-half to five inches. Two elbows curved to an angle of forty-five degrees are connected by swivel joints so that a stream can be delivered in any direction.

WHAT THE POLICE AND FIREMEN ARE DOING

Platforms to Load Apparatus on Trains—London's Fire Department—Fire Burned a Year—Bloodhounds for Police—Impure Milk in Paris—No Free Rides for Policemen

BLOODHOUNDS FOR THE POLICE.—At a recent meeting of the City Council of Des Moines, Iowa, one of the aldermen introduced a resolution which provided that the mayor and chief of police should purchase three bloodhounds for the use of the police department. The dogs will be used for tracking criminals in Des Moines, and will cost about $500.

EIGHT HOUR DAY FOR THE POLICE.—Mayor Schmitz of San Francisco, Cal., has suggested that the members of the police force be given an eight hour day. This suggestion from the Mayor has been approved by the police commissioner, and the expenses for the ensuing year will be calculated upon that basis. It is probable that the new scheme will entail a greater expense upon the city because of the need of more officers.

PLATFORMS TO LOAD APPARATUS ON TRAINS.—The Fire Board of Newark, N. J., recently proposed to the Fire Board of Jersey City that platforms and inclines be constructed at the railroad stations in Jersey City so that fire apparatus might be transferred to and from trains in case of need. The Newark Board stated that, at the time of the Paterson fire, they were delayed more than two hours in sending apparatus to Paterson and that any such delay is as dangerous as it is needless.

REVOLVERS IN COUNTY OF WEXFORD.—A peculiar practice is in vogue in County Wexford, Ireland, in the police force. Policemen are not allowed to carry their revolvers loaded. The ammunition is carried in the pocket of the great coat and over this is the belt supporting revolver case and sword. When the revolver is to be used it may be loaded and not before. As may be imagined, by the time the officer can get out his cartridges and load up, the "enemy" has made good his escape.

MILK BOTTLES FOR MILK ONLY.—The Health Board of New York City has recently passed a resolution that all milk bottles and cans are to be used for nothing but milk. No person will be allowed to use the empty bottles for anything but the primary purpose, and an ordinance will be passed making it a misdemeanor for any person to use bottles for foreign substances, such as vinegar, molasses, etc. It is a common practice for tradesmen and householders to use these empty milk bottles for purposes other than that for which they were intended.

IMPURE MILK IN PARIS.—A campaign against impure milk has been vigorously conducted in Paris and other large cities of France, and an endeavor has been made to educate people to a point of insisting upon the purity of milk when they are supplied. The ravages made by bad milk among young children have aroused the authorities to suppress, as far as possible, the frauds that have been freely practiced by the milk venders. The said venders are now carefully watched by the police and stringent measures have been adopted to prevent the adulteration of milk.

FIRE BURNED A YEAR.—The fire that devastated the city of Jacksonville, Fla., a year ago has not been entirely extinguished. When some men attempted to excavate a portion of the ruins, it was found that within three or four inches of the top the ruins were warm and smoke began to come out of the hole that was dug. As they dug down the material became hotter and hotter, and at last red hot coals were found, which sprang into a flame as soon as they reached the air. It has been necessary, from time to time during the past year, for the fire department to soak the ruins, and it was thought that the fire was at last out, but such has not proved to be the case.

A WAY TO STOP SPEEDING.—The police in charge of the outlying districts about the city of Paris, France, are said to have devised a way to compel the operators of automobiles to observe the speed law. Narrow and deep trenches are cut across the middle of the stretches of the road which would tempt fast driving and, when the racing car comes past at a rapid pace, it receives such a bump that in many cases the springs are broken. It is held by the police that the obstruction can be seen and avoided by those who drive at a legal rate. In order to trap offenders, the location of these trenches are changed occasionally. So satisfactory has this method proved that the police very seldom proceed against the violators of the law.

BAY CITY FIREMEN.—The report of Chief Engineer Hardy of Bay City, Mich., contains much valuable information regarding the department. At present the department is composed of forty-two men who take charge of six hose wagons, two trucks and one chemical engine, The 172 alarms which occurred during the last year resulted in a total loss of $36,727, which was $44,738 less than the year before. The amount of hose on hand is over 15,000 feet, but the Chief recommends that this be increased. The Council appropriated $28,358 for the maintenance of the department, but the expenditures were kept down so that there is a balance of over $658 to the credit of the commission. The Chief recommends that an aerial truck be added to the equipment in place of the one now in use.

TAME PIGEONS CARRY SCARLET FEVER GERMS.—The epidemic of scarlet fever that has been prevalent in Cincinnati and other Ohian towns, has caused the health authorities of the city to believe that much of the contagion has been spread by tame pigeons and doves which carry the germs from place to place. The authorities were led to this conclusion from the fact that the disease of scarlet fever spread from one house that had been strictly quarantined. No one seemed to be able to account for the spread of the disease until it was noticed that there was a large pigeon loft on the house in which were kept a number of tame pigeons. As the pigeons themselves were not quarantined, but flew all about the neighborhood, it seemed most probable that they were the cause of spreading the contagion.

NO FREE RIDES FOR POLICEMEN.—The Appellate Division of the Supreme Court of New York State has decided that policemen and firemen are public officers in so far as public officers are forbidden to use passes on railways. As told in THE MUNICIPAL JOURNAL for April, the Mayor of Albany endeavored to compel the traction company to carry firemen and policemen of the city free, but the company objected on the ground that the police and firemen were public officers, and as such prohibited from accepting free transportation. The Mayor contended that the police and firemen were public servants and not public officers. The Court holds that the Act of the Legislature of 1895 which compelled transportation companies to give free rides to policemen, is unconstitutional in that it deprives all the companies of their property without due process of law, and takes private property for public use without compensation.

LONDON FIRE DEPARTMENT.—The English government proposes to discontinue its contribution of $50,000 a year towards the expenses of the Metropolitan (London) Fire Department and the officials are much worked up over it. The Government maintains that the contribution was made in lieu of taxes, but as adequate taxes are now paid on Government property the contribution should cease. The authorities in London reply that a history of the department shows that it has been supported from many sources and that in 1865 the Government contribution was fixed deliberately in a certain proportion to the rates—one to five—the estimated cost of the department being $250,000. The proportions have altered considerably since then. The total gross cost has increased from $330,000 in 1866 to $1,455,000 in 1901. The insurance companies' contributions have

increased from $55,000 to $160,000 and the amount raised from the tax payers has increased from $155,000 to $1,030,000, but the Government contributions have remained stationary.

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POLICE TO ENFORCE CLEAN STREET ORDINANCES.—The police forces of several cities have started on active campaigns for the enforcement of the clean street ordinances. Chief Murphy of Jersey City, N, J., has instructed his men to be especially vigilant regarding the proper disposal of ashes and garbage in receptacles on the sidewalks, to watch that the contractor's men do not spill any of it when removing, prevent the scattering of circulars, etc., prohibiting any one from disturbing ash barrels except the contractors and to see that coal, dust or earth is not dropped on the streets from wagons. The police of Canton, O., have been ordered to make arrests wherever they discover violations of the ordinances relative to keeping the streets clean. Sections of the city code in Atlanta, Ga., provide that the sidewalks must be kept free from grass and weeds under penalty of a fine of $100 and the police are ordered to rigidly enforce these ordinances. Still in another city will the police lend a hand in the enforcement of the city ordinances. Chief of Police Davenport, of Sioux City, Ia., has issued a notice to citizens stating that the ordinances prohibiting the throwing of waste paper and debris on the streets will be enforced. A fine of from $5 to $25 is the punishment for depositing waste paper on the streets and one of $100, or imprisonment for not more than thirty days, for allowing dirt or the like to fall on the streets from carts.

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POLICE FORCE IN GOOD SHAPE.—The report of police affairs in Terre Haute, Indiana, for the past year shows that the force in that city is in good shape, notwithstanding the fact that it is much too small for the increased size of the city. Chief Hyland says that during the last year the city has been remarkably free from crime of a serious nature. The force has succeeded in recovering about 79 per cent. of property stolen, the full value of which aggregated only $2,475. Patrolmen with wheels are always kept in reserve at police headquarters so that important calls can be responded to quickly by them, and many arrests are made that would otherwise not be possible. The chief recommends that steps be taken to see whether or not the jurisdiction of the city police corps can not be extended to cover all juvenile cases, because of the fact that the punishment of many youthful offenders is often delayed. Chief Hyland also heartily indorses the curfew organization, which has been in operation some three years, and which makes it possible to keep children off the streets at late hours. The curfew signal is sounded on city fire houses and the large whistles on manufacturing plants, and children under fifteen years of age must not be found on the streets after that. The total expenses of the department for the year amounted to $30,497. The superintendent of police receives $1,200 per year; captains and detectives, $900; sergeants, $840, and patrolmen, $730.

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DEPARTMENT WELL CONDUCTED.—The Board of Public Safety, which is under the Board of Public Works of Terre Haute, Ind., has submitted its second annual report showing the work that has been done in the departments of fire and police. The hose supply of the department was increased by the addition of 700 feet of cotton hose and 300 feet of rubber. The cotton hose was purchased for $0.90 per foot with a discount of 20 per cent.; the rubber hose at $1 per foot. The Board recommends that the large hose tower be torn down and the lumber used for the erection of smaller ones. The Gamewell fire alarm telegraph system was highly recommended as being in fine condition and giving the best of service. The total expenditures for the department amounted to $5,735.57 and for salaries, exclusive of that of the chief, $34,247.71. One thousand and ninety-six dollars and ninety-six cents were spent on the police force and $29,177.97 on salaries. In both departments the expeditures were less than the appropriations. A separate report by Chief James J. Dougherty, of the Fire Department, states that the force consists of a chief, an assistant chief, an electrician, seven captains, twelve drivers, twenty-one hosemen, five laddermen and one hose tower man. The apparatus is made up of two third-class steamers, six hose wagons, a Babcock double tank chemical engine, one aerial extension ladder truck, one Babcock city truck, a fire alarm telegraph wagon, etc.

FIRE AND POLICE PERSONALS

—J. A. Yakel has been promoted to the position of Superintendent of Police and Fire Alarm Telegraph of Baltimore, Md.

—Chief Hilton of the Police Department of Salt Lake City, Utah, has retired in favor of Chief Paul, after a long controversy with the Mayor.

—Dr. A. R. Ong, who has been chief of the fire department at Martin's Ferry, W. Va., for fourteen years, has been retired at his own request, and Mr. Heyward Long was elected unanimously in his place.

—William E. Horne has been appointed by the Board of Fire Engineers, of Millbury, Mass, to the position of Chief of the Fire Department. This makes the seventh year that Mr. Horne has been appointed Chief.

—Chief George P. McGillan, of the Appleton (Wis.) Fire Department narrowly escaped serious injury or death in a recent fire, on account of a fall received from the second floor, while attempting to find his way down stairs through the smoke.

—Chief of Police Richard Sylvester, of Washington, D. C., was elected president of the International Association of Chiefs of Police. Chief F. J. Cassada, of Elmira, N. Y., was elected first vice-president; Col. M. Grasset, of Ontario, Canada, second vice-president, and Harvey O. Carr, of Grand Rapids, Mich., secretary and treasurer.

—Mr. George Downey, who was the last chief of the Philadelphia Volunteer Fire Department, and was also the last surviving chief, died in a private sanitarium in that city on April 24th, of a complication of diseases incident to old age. He made his last public appearance on Thanksgiving Day at the Firemen's Parade in Norristown, Pa.

—Penny ante has caused the downfall of Mr. Harry B. Hawes, president of the St. Louis (Mo.) Board of Police Commissioners. Mr. Hawes has been indicted by the Grand Jury on a charge of gambling, together with Congressman W. W. Rucker and a Supreme Court Judge of that State. The gambling is alleged to have occurred during a fishing trip to the Grand River.

—Chief C. H. Austin of the Birmingham (Ala.) Police Force has been re-elected for the coming year. The Chief is not satisfied with his department for he says it is "the poorest equipped that you will find anywhere." He wants better means of communicating with his men on beat; the introduction of the Bertillon system of measuring criminals; and the privilege of naming his staff.

—In his report to the Police Commissioners, Chief Hiner of the Trenton (N. J.) Police Department, has recommended that a mounted squad of men be equipped for duty in the outlying districts. The territory is too large to be covered effectively by footmen or bicycle policemen. Chief Hiner also recommends that signal lights be placed at the street patrol boxes, and that a revolver range be established for the men.

—The re-election of Mayor Reed, of Kansas City, Mo., has resulted in the dismissal from office of Chief George C. Hale of the Fire Department. There has been serious trouble between Mr. Hale and the Mayor relative to the installation of the Gamewell Fire Alarm Telegraph, the Chief opposing the installation. When the Mayor was re-elected he felt safe in causing the retirement of the Chief, and the Upper House of the Council sustained his action by a vote of 11 to 3. Chief Hale had been at the head of the department for nearly twenty years, and was the inventor of many fire appliances, including the Hale water tower and the swinging harness. First Assistant Edward Trickett has succeeded to the office of Chief.

FIRE STATISTICS IN AMERICAN CITIES

Including Those Having a Population of 36,000 and Upward

	Area, sq. mi.	Population.	No. alarms.	No. fires.	Confined to building.	Value property involved in fires on which claim for loss is made.	Total insurance thereon.	Insurance loss.	Total loss.	Loss per capita.
New York, N. Y.	325.58	3,437,202	9,327	8,424	8,273	.....	$95,493,694	$8,328,443	.....	$2.42
Philadelphia, Pa.	129.50	1,293,697	3,190	3,017	2,961	.....	37,071,805	2,058,190	$2,656,855	2.05
St. Louis, Mo.	61.37	575,238	3,894	3,894	....	.....	15,303,611	2,597,135	2,724,828	4.75
Boston, Mass.	37.04	560,892	1,681	1,470	1.405	.....	17,556,968	1,647,680	1,754,437	3.13
Baltimore, Md.	33.00	508,597	1,612	1,549	1,491	.....	8,020,581	1,478,410	1,499,504	2.94
Cleveland, O.	35.00	381,768	1,499	1,400	1,364	.....	5,535,415	957,828	.....	2.51
Buffalo, N. Y.	42.00	352,387	1,309	1,309	1,257	$8,023,548	5,003,636	1,059,173	.....	3.01
San Francisco, Cal.	38.87	342,782	1,215	1,182	795	14,388,735	5,755,494	525,768	661,461	1.64
Cincinnati, O.	36.50	325,902	1,302	1,282	1,244	7,185,261	5,753,457	994,755	1,277,422	3.92
Pittsburg, Pa.	28.39	321,616	1,211	1,189	1,154	.....	7,506,736	1,034,702	1,269,931	3.94
New Orleans, La.	60.00	287,104	571	571	496	6,676,860	3,438,751	728,261	.....	2.53
Detroit, Mich.	29.00	285,704	1,081	1,081	....	5,822,223	3,631,942	605,393	697,278	2.44
Milwaukee, Wis.	23.00	285,315	1,403	1,154	1,153	27,720,266	18,029,292	723,425	736,873	2.54
Washington, D. C.	72.00	278,718	710	628	628	.....	.....	.....	285,677	1.03
Newark, N. J.	21.00	246,070	429	429	427	4,045,000	3,334,911	270,578	359,700	1.46
Jersey City, N. J.	17.00	206,433	639	639	615	15,000,000	1,651,497	396,132	433,527	2.10
Louisville, Ky.	20.00	204,731	803	433	368	4,208,046	3,506,705	352,305	.....	1.72
Minneapolis, Minn.	56.00	202,718	1,195	1,179	1,094	9,397,853	.....	467,417	471,488	2.33
Providence, R. I.	18.25	175,597	633	633	625	.....	6,300,853	320,323	344,791	1.96
Indianapolis, Ind.	29.00	169,164	1,099	1,099	1,063	.....	.....	.....	.....	....
Kansas City, Mo.	26.00	163,752	1,444	1,328	1,255	14,441,235	11,108,642	757,114	798,946	4.87
St. Paul, Minn.	55.00	163,632	779	584	....	.....	3,106,661	393,206	.....	2.42
Rochester, N. Y.	25.00	162,608	697	697	688	.....	3,430,646	259,867	.....	1.59
Denver, Colo.	54.00	133,859	593	593	....	4,396,375	349,590	.....	14,540	2.64
Toledo, O.	28.57	131,822	551	551	549	6,000,000	4,009,405	434,134	471,114	3.57
Allegheny, Pa.	8.00	129,896	314	314	310	.....	472,850	146,133	175,173	1.35
Columbus, O.	16.25	125,560	594	594	594	599,475	560,822	137,359	176,002	1.40
Worcester, Mass.	36.00	118,421	585	585	584	2,638,121	2,110,492	75,129	109,777	.93
Syracuse, N. Y.	22.50	108,374	375	365	364	.....	2,512,807	408,786	421,911	1.29
New Haven, Conn.	22.50	108,027	292	292	292	1,143,682	884,330	92,774	121,930	1.13
Paterson, N. J.	8.75	105,171	365	365	365	.....	2,175,762	202,104	220,871	2.10
Fall River, Mass.	41.00	104,863	152	152	152	6,625,625	5,896,105	26,347	.....	.25
St. Joseph, Mo.	11.00	102,979	314	314	296	1,163,712	967,760	195,119	196,767	1.91
Omaha, Neb.	26.50	102,555	469	413	395	6,873,443	.....	245,493	256,058	2.49
Los Angeles, Cal.	60.00	102,782	368	368	....	.....	.....	.....	151,190	1.47
Memphis, Tenn.	16.00	102,320	502	480	446	2,171,098	1,821,287	351,397	288,841	3.80
Scranton, Pa.	19.06	102,026	164	164	161	.....	.....	.....	300,000	2.94
Lowell, Mass.	12.10	94,969	398	398	394	5,932,768	3,983,117	172,987	248,279	2.61
Albany, N. Y.	15.00	94,151	678	678	644	.....	2,257,529	104,519	119,019	1.25
Cambridge, Mass.	6.74	91,886	283	283	277	666,203	524,313	75,908	95,240	1.05
Portland, Ore.	40.00	90,426	360	360	344	1,513,692	713,863	166,306	254,704	2.81
Grand Rapids, Mich.	17.00	87,565	449	449	446	2,712,818	1,585,790	129,538	.....	1.48
Dayton, O.	14.00	85,333	487	487	487	1,277,200	750,130	168,962	187,414	2.19
Richmond, Va.	5.65	85,050	473	465	459	.....	2,363,245	961,713	.....	11.30
Nashville, Tenn.	11.15	80,865	348	305	284	1,545,210	1,236,169	322,828	403,533	4.99
Reading, Pa.	6.00	78,961	89	84	84	65,331	.....	.....	43,567	.55
Wilmington, Del.	11.00	.....	....	....	....	.....	.....	.....	.....	....
Trenton, N. J.	7.25	73,307	181	181	175	.....	.....	92,428	94,842	1.29
Lynn, Mass.	11.13	68,513	364	364	362	2,252,516	2.009,651	122,017	134,006	1.95
Oakland, Cal.	23.00	66,960	188	188	184	459,980	357,830	34,446	38,151	.54
Lawrence, Mass.	7.15	62,559	169	169	168	1,588,083	1,165,030	12,585	13,737	.28
New Bedford, Mass.	12.00	62,442	193	173	173	.....	220,150	23,187	30,861	.49
Des Moines, Ia.	56.00	62,139	435	435	434	4,685,430	1,525,000	410,184	415,184	6.69
Springfield, Mass.	37.00	62.059	249	249	243	831,898	658,830	118,208	143,247	2.31
Somerville, Mass.	4.50	61,643	245	245	238	337,974	217,860	66,775	74,305	1.20
Troy, N. Y.	3.00	60,651	270	....	....	.....	.....	96,000	.....	1.58
Hoboken, N. J.	1.13	59,364	165	165	165	629,741	470,450	44,774	45,797	.76
Evansville, Ind.	6.00	59,007	234	234	223	.....	1,154,200	419,651	.....	7.11
Manchester, N. H.	33.90	56,987	194	194	190	443,490	333,711	24,628	33,378	.59
Utica, N. Y.	7.10	56,383	149	149	149	.....	.....	171,898	196,338	3.48
Peoria, Ill.	8.50	56,100	364	364	320	.....	720,970	125,819	.....	2.15
Charleston, S. C.	5.36	55,807	151	151	144	1,025,122	260,425	31,754	66,810	1.18
Savannah, Ga.	9.00	54,244	263	263	252	1,085,445	.....	.....	61,743	1.13
Salt Lake City, Utah	54.50	53,531	154	154	149	2,428,778	1,038,150	202,873	310,870	5.81
San Antonio, Tex.	36.00	53,321	185	165	160	.....	.....	102,500	.....	1.92
Duluth, Minn.	64.00	52,969	218	218	218	.....	5,493,050	.....	186,429	3.54
Erie, Pa.	7.50	52,733	180	180	178	.....	827,256	68,169	.....	1.29
Wilkes-Barre, Pa.	4.86	51,721	107	107	106	.....	446,600	.....	124,234	2.40
Kansas City, Kan.	12.00	51,418	336	336	313	2,380,515	896,170	218,112	307,670	5.98
Harrisburg, Pa.	4.04	50,167	47	47	41	241,100	179,755	22,391	.....	.44
Portland, Me.	18.00	50,145	205	205	202	1,222,568	741,831	218,946	278,821	5.56
Yonkers, N. Y.	21.00	47,931	193	193	193	518,000	466,200	131,671	138,001	2.87
Norfolk, Va.	4.08	46,624	219	212	209	1,983,655	870,735	.....	32,387	.88
Waterbury, Conn.	5.50	45,859	124	116	116	.....	.....	17,051	18,951	.41
Holyoke, Mass.	16.35	45,712	195	195	194	3,276,625	2,773,831	31,492	33,491	.73
Ft. Wayne, Ind.	5.00	45,115	203	203	203	.....	458,095	48,926	49,241	1.09
Youngstown, O.	12.00	44,885	230	230	223	.....	85,218	5,086	90,304	2.01
Houston, Tex.	9.50	44,633	304	292	....	2,756,575	684,920	145,451	153,671	3.44
Covington, Ky.	3.50	42,938	180	180	180	.....	.....	47,959	49,039	1.14
Akron, O.	7.60	42,728	167	148	146	797,143	610,850	57,828	68,239	1.59
Dallas, Tex.	9.25	42,638	398	398	365	3,560,468	2,208,110	338,466	375,551	8.66
Saginaw, Mich.	15.00	42,345	119	119	117	337,434	202,718	40,752	50,752	1.19
Lancaster, Pa.	4.00	41,459	41	41	41	.....	73,000	22,206	.....	.53
Lincoln, Neb.	14.00	40,169	153	144	137	1,494,752	845,683	45,020	46,135	1.14
Brockton, Mass.	23.00	40,063	227	164	161	2,225,670	1,443,400	36,863	28,908	.72
Binghamton, N. Y.	10.00	39,647	106	106	104	.....	432,365	70,360	79,257	1.99
Augusta, Ga.	5.03	39,441	169	169	166	582,946	456,876	168,180	176,875	4.48
Pawtucket, R. I.	9.00	39,231	127	127	124	.....	.....	19,035	25,045	.63
Altoona, Pa.	6.00	38,973	256	256	254	275,000	127,050	9,032	9,037	.23
Wheeling, W. Va.	6.00	38,878	229	....	....	.....	1,172,337	81,018	.....	2.08
Mobile, Ala.	6.00	38,469	195	195	185	.....	324,650	98,800	.....	2.57
Birmingham, Ala.	9.00	38,415	335	335	320	1,439,961	714,379	125,018	136,519	3.55
Little Rock, Ark.	15.00	38,307	241	241	236	213,765	73,175	40,508	58,700	1.37
Springfield, O.	11.50	38,253	209	209	208	1,573,835	716,200	.....	406,682	10.62
Galveston, Tex.	6.50	37,789	178	178	177	285,430	94,170	.....	.....	....
Tacoma, Wash.	9.00	37,714	229	229	227	.....	254,350	32,248	44,918	1.14
Haverhill, Mass.	32.00	37,175	151	151	146	531,845	375,775	56,154	59,625	1.60
Spokane, Wash.	16.00	36,848	230	125	122	536,105	437,275	70,353	84,178	2.28
Terre Haute, Ind.	5.50	36,673	229	229	217	.....	313,951	89,367	.....	2.40
Dubuque, Ia.	11.00	36,297	135	132	127	.....	.....	150,000	.....	4.13

From report of the Committee on Statistics of the National Board of Fire Underwriters.

CURRENT NEWS AND PRACTICE AMONG THE CITIES

Reviews of Some Important Books—What the Magazines and Reviews Have to Say About Civic Affairs—Municipal Reports Received

THE subject of *Tanks and Towers for Water-Works* is one that has never received special attention until J. H. Hazlehurst, C. E., took up the matter and produced the treatise bearing the above name. That the subject is one of importance, there is no doubt, and it is only the more surprising that no one has taken up the subject before in view of the fact that the number of water tanks or towers is rapidly increasing. In the smaller water works, where economy is a serious element and where natural elevations cannot be secured for a gravity supply, water tanks, standpipes, or whatever name they may bear, are usually specified and a special study of the subject of their design and construction becomes necessary to engineers.

IT is to meet this need that this book has been written. But meagre and little reliable information is to be had and it is on account of this that so many failures have been made. This work is written from the personal experience of the author as well as from special research. Practical instructions take the place of theory and simple truths are given the prominence they merit. After a short historical review, the remaining chapters take up the subjects of chemical and physical properties of structural steel; comparison of structural materials; stability of structure, bringing in the resistance offered by metal; mechanical principles of bending, elasticity, etc.; riveting; designing; foundations; painting, and erection. Diagrams, formulas and tables are freely used and add to the practicability of the work. John Wiley & Son, New York, are the publishers and the price is, cloth, 8vo., 216 pages, $2.50 net.

♣

THE visitor to a strange city, be it in his own country or in a foreign land, is sure to miss the best part of sightseeing and waste his time unless provided with a correct and well edited guide-book. *Cook's Handbook for London* comes under this category, for within its 100 pages will be found a guide to every thing to be seen in that English capital. There is a good map to show the general outlay of the streets and railways, a list of the tramways and where they go, places of interest and how to get there in the shortest time, a list of short excursions into the country about the city, a copious index and a lot of other things too numerous to mention. *Cook's Guide to Paris,* while arranged in a different way, is equally as good. A daily itinerary of places to be visited is given, and at the end is appended a short vocabulary of common words and phrases with their pronunciation and meaning in English to assist the traveller in making himself understood. Both of these books are published by Thomas Cook & Son, Ludgate Circus, London, England, and sell for 1 shilling each.

♣

The Civil Service Manual is a practical guide to examinations for appointments for all branches of the civil service under the English system. Published by the London Civil Service Press, London, England, for the author, George Edward Skerry. Price 2 shillings.

♣

The Septic System of the Ocean is the title of a small pamphlet which, in a roundabout way, tells how the Sargasso Sea was the first septic tank in the world and from which its inventor obtained his idea. Following this is a description of the *Septic Tank System at Exeter,* England, and an argument for the superiority of the septic tank over any other form of sewage disposal. Published by the *Public Health Engineer,* London, England. Price 1 shilling.

♣

What is a Kindergarten? is the unique title of an eighty-page book by George Hansen. It is a plea for the beautification of the garden and street and the closer association of the child with plants and animals. To Mr. Hansen a kindergarten is "the playground of the child, the home of the mother, the battlefield of the man, and the anchor-ground of patriotism." He outlines a plan for the making of the child's garden, the kinds of trees and shrubs and plants that will do well in different climates and soils and the advantages and disadvantages of each. The animals that are fit for children to play with and the care of plants and grounds are taken up. At the end of the book are nine plates showing how to lay out kindergartens for a twenty-five, fifty, and 100-foot lot. This book is the first part of a series "Park and Pavement" and is the outdoor expression of what Froebel developed in his indoor kindergarten. Address George Hansen, Landscape Architect, Berkeley, Cal. Price 75 cents.

♣

The Water Works Directory and Statistics, 1901-2, is a volume that every English engineer of water works should possess. It is the twenty-fifth issue of the work and in the 158 pages will be found statistics of the water works of Great Britain and Ireland with the population of the towns having water supplies, the railway connections, the owner, date of formation, capital, death rate, source of supply, the area supplied, the character and quantity of water used, charges for same, number of meters, etc. In fact it gives all that an engineer would want to know about any water company. In the second section is a similar directory, giving statistics of foreign water works having offices in London. Published by Hazell, Watson & Viney, Ltd., 52 Long Acre, W. C., London, England.

♣

THE third series of *Legal Decisions,* compiled and arranged by Peter Milne, C. E., Secretary of the American Water Works Association, has been issued. This pamphlet contains arbitration on questions of water supply, etc., and extracts are given from decisions of courts all over the country relative to points on water courses, pollution, diversion, surface waters, etc., and also suits in which municipalities have been parties. Two court decisions are given in which the question of eminent domain was a factor and one involving constitutional law.

♣

How to Set Out Trees and Shrubbery is the title of a small pamphlet by Prof. H. L. Bailey, of Cornell University, and published by *The Youth's Companion,* Boston, Mass. The author outlines the ways in which the rural school grounds can be made attractive to the pupils and points out the mistakes that are made by those desirous of so beautifying them. He gives several sketches and plans showing his ideas on the subject. He also tells how to plant, protect and care for trees and what not to do in this line. The publishers also issue a folder containing an article by Prof. Andrew S. Drayer, of the University of Illinois, on *Ideal Public Schools,* and one on *The Country Schoolhouse and Its Grounds,* written by Hon. James Wilson, Secretary of Agriculture.

♣

To become a thorough road engineer it is necessary that one learn all there is to be known about the character of the materials with which one has to deal. So many works on the subject of road building ignore the subject of road materials, dealing only with the proper laying of them. *Roads: Their Construction and Maintenance* is not like the ordinary works on this very account. The authors, Allen Greenwell and J. Vincent Elsden, have divided their work into three parts, devoting nearly one-half of the 280 pages to a discussion of road materials. They have brought out the various qualities of road stones. Considerable space is given to the mineralogical character of the different stones, showing in this way why stones possess the qualities for road building that is usually well-known. Tables and diagrams further illustrate the discussion. Asphalt and wood for paving are also explained as well as all other material used for pavements. While the practical is everywhere given first place, enough of the technical is introduced to make more clear the why of things. The selection of road materials is treated fully.

In Part II. the subject of Construction is taken up and here is shown how roads have developed from the earliest times and how the different kinds of roads are best constructed. Drainage, upon which depends the lasting qualities of all roads, is well handled. This chapter is very concise but adequate from a practical standpoint.

Part III. is devoted to Maintenance. The causes of wear in roads, how they should be repaired, swept, watered and cared for are taken

up. The last two chapters in the book are given up to the consideration of the cost of different kinds of roads in England and the general conditions of expense that are to be met with anywhere. While the authors have made statements that are sure to be disputed by some road builders, the underlying principles, which are indisputable, are well elucidated and this fact alone renders the book worthy of a place in the library of every engineer. Published by Whittaker & Co., Paternoster Square, London, E. C. Price in cloth, 5 shillings.

Landscape Art, Past and Present, is the title of a paper which Harriet Hammond McCormick read at the annual meeting of the American Park and Out-Door Art Association at Chicago, June, 1900. The author reviews the work that has been done in landscape art in the past in Europe, and then goes on to show what is being done in this country. She speaks of the number of country seats in the United States which are devoid of any object in their laying out, and considers that some definite subject should be selected before attempting to lay out any grounds. Various suggestions are given of how best to accomplish the end sought, and a number of half tones give color to the text.

Mr. Burton J. Ashley, C. E., has issued a complete form of *Constructional Specifications for Engineers, Architects, Corporations or Proprietors.* Mr. Ashley has endeavored to outline some model specifications suitable for almost any class of work in this line. It would be worth the fifty cents charged for a copy to any one who is contemplating constructional work. Copies may be obtained of the author, who is located in Chicago.

The Committee of Fifteen appointed by the New York Chamber of Commerce to investigate the social evil existing in New York, has issued its report under the title of *The Social Evil.* The work itself was compiled by Mr. Alvin S. Johnson, an instructor at Bryn Mawr College. Mr. Johnson prepared an historical sketch of this evil, showing the measures that were adopted in ancient mediæval and modern times for its suppression in Europe. He contrasts the method of regulation which was tried in various cities on the Continent, taking in also the sanitary and moral aspects of this method, with the moral and sanitary control. He points out the practical difficulties in regulation, and the actual effectiveness of sanitary control. The author then considers what would be the probable effect of the installation of reglementation in New York. The moral regulation of vice is without doubt the most practical for New York City. Attached to the foregoing are the recommendations of the committee relative to the better control of prostitution in New York. The policy outlined is: (1) strenuous efforts to prevent overcrowding in tenements; (2) the furnishing, by public provision or private munificence, of purer and more elevating forms of amusement to supplant the attractions of the low dance halls, etc.; (3) the improvement of the material condition of the wage-earning class, especially of young wage-earning women; (4) the confinement in asylums or reformatories of notoriously debauched minors; (5) checking of the spread of contagion by more adequate hospital accommodations; (6) the punishment of the evil as a sin against morality whenever it takes the form of a public nuisance. Published by G. P. Putnam's Sons, New York, N. Y. Cloth, 118 pp. $1.25.

We are indebted to Mr. Robert A. Meeker, State Supervisor of Roads of New Jersey, for the report of the committee of Southampton, Long Island, on the *Good Roads Movement.* The majority report states that Southampton requires the installation of scientific road building in place of the present wasteful system before the town will reap the full benefit of her natural advantages. "No advertisement begins to compare with good roads as a means of bringing to this section the summer residents, because their presence not only increases the value of land, but also general business. The phenomenal development of New Jersey confirms this statement." The committee recommends that $200,000 in bonds be issued for building twenty-seven miles of road. It is estimated by Mr. Meeker that a sixteen foot macadam road with dirt wings of four feet in width can be built at the rate of $4,797.44 per mile. If a thirty foot highway is laid, the cost will reach $10,297 per mile.

The Newspaper Press Directory and Advertisers' Guide, which is published by Messrs. C. Mitchell & Co., of London, England, is a volume of some 215 pages, filled with valuable information and statistics relative to newspapers that are published not only in the United Kingdom but throughout the British Empire in general. A large map accompanies this volume, showing the towns having one or more papers, both daily and weekly. The edition for 1901 forms the fifty-sixth annual issue.

The new charter for New York City necessitated a new edition of the *Political Primer of New York City,* by Adele N. Fielde. This little book contains the meat of the charter, and tells briefly and clearly the methods of administering the municipal government of city, county and state. We should suggest that, when another edition is published, the author group in separate chapters the portions of the book that can be readily so treated, for this would render it more valuable as a reference book. If an itemized index was also added the book then would be invaluable to the citizens of New York. Published by The League for Political Education, New York. Price, paper covers, fifty cents.

PERIODICALS

The Contract Journal for April 30th, 1902, contains an article on *London County Council Tramways.* This article is a good description of the conduit tramway system which the London County Council has installed at Tooting. It is accompanied by illustrations showing the progress of the work at different stages and outlines of the kind of cars that will be used. London, England. Price 6d. per copy.

Municipal Bodies and Architecture is the subject of an article in *The Surveyor* for April 25th, 1902. It is taken from a paper by Reginald Blomfield, and makes the point that architects must cease copying the past and, freeing their minds from conventions and prejudices, do some original thinking for themselves. London, England. Price per week 3d.

Alfred J. Jenkins has contributed an article on the *Filtration of River Water,* to *The Sanitary Record* for April 25th, 1902. The author considers the usage of rivers which are liable to pollution as sources of water supply for communities. He takes up the three different methods of treating river waters, viz., sedimentation, slow filtration and rapid filtration, and points out the advantages of each method. The article is not finished in this issue, but will be continued in the edition of May 1st. London England. Price 3d.

Next to the supply of water, that of pure milk is the most important to the inhabitants of any town or city. Under the caption *The Problem of a Pure Milk Supply* by Dr. H. D. Chapin, in *The Forum* for May, 1902, is presented an article in which is considered the different elements that affect the purity of the milk supply. The author says that the milk supplied to large restaurants and similar consumers must be sold so cheaply that the requisite care for cleanliness, etc., cannot be taken. No amount of legislation can remedy this state of affairs, and if the people wish clean milk a fair price must be paid. The dealers who supply the family trade receive a much higher price, and therefore can take the best precautions to secure the purity of their commodity. Their milk is bottled on the farms, packed in ice, and shipped directly to the distributing stations in the city. The milk supplied to New York is much better than that furnished to many villages and small cities. "According to the milk dealers the great trouble is that the public cannot *see* any difference between perfectly clean milk and the ordinary article. For this reason people are not aware of being made sick by milk, and will not pay the price that extra cleanliness necessitates." Prof. A. D. F. Hamlin presents an article entitled *Our Public Untidiness.* The author finds in the history of our national development an explanation of past indifference to the virtue of neatness, but says that the time has come when we should free ourselves from the reproach of being "the most untidy among all the great nations of the world." He says that we are learning this truth and are discovering that there is more filth,

squalor and general slovenliness in public places, streets, etc., in the United States than any other country of first or second rank. New York, N. Y. Per year $3.00; per copy 35 cents.

The City of Wilkes-Barre is the title of an article in *The National Magazine* for May by Eugene T. Giering, and is a brief outline of what a visitor to that city will find. He says that the city has not had a mushroom growth but will continue to expand in the future as in the past. Boston, Mass. Price per year $1; per copy 10 cents.

Alton D. Adams contributes an article to *The Journal of Political Economy* for March, on *Municipal Gas and Electric Plants in Massachusetts.* Chicago, Ill.

The North American Review for April, contains an article on *Police Power and Police Affairs* by W. A. Purrington, New York, N. Y. Price per year $5; per copy 50 cents.

The Worcester Magazine for May, 1902, contains an interesting article on *Sewage Purification by Chemical Precipitation,* by Harrison P. Eddy, Superintendent of Sewers, of Worcester, Mass. After describing the features of the chemical purification of sewage, the author asserts that the effluent from this method of treatment can safely be turned into tide water or into a river of several times the flow of effluent, or perhaps into lakes of considerable size without dangerous results. Worcester, Mass. Price per year $1.00; per copy 10 cents.

The Municipal Journal for April 25th, 1902, contains a description of the municipal electric lighting and new tramway undertaking in Middleton, with illustrations of the power house and tramway structures. London, England. Price, per copy, one penny.

In *Insurance Engineering* for April, 1902, appears an article by Houston Dunn, on *Some Conditions in Philadelphia.* The author criticises the building laws of Philadelphia as being entirely inadequate toward compelling the erection of fire proof structures, and strengthens his assertions by illustrations of several buildings in that city. There is another interesting article in this issue on the *Use of High Explosives in Cities.* New York, N. Y. Price per year $3.00; per copy 25 cents.

Proceedings of The American Society of Civil Engineers for April, 1902, contains a paper by George L. Dillman on the *Proposed New Type of Masonry Dam.* New York, N. Y.

The Police Dogs of Ghent is the title of an article by J. E. Whitby, in the May issue of *Current Literature.* Mr. Whitby describes the interesting way in which dogs of this city are trained to assist the police on their nightly patrols. He says that the dogs go on duty at ten o'clock in the evening, and remain with the officers until six in the morning. They are uniformed and in wet weather wear a waterproof coat to keep them dry. The idea of using dogs to help the officers originated with the Chief Commissioner of Police, and the experiment has proved a great success. The dogs work so well that their number is to be increased, and the plan will probably be adopted in other cities. New York, N. Y. Price per year $3.00; per copy 25 cents.

The issue of *Municipal Affairs* for March, 1902, is full of many interesting articles relative to the municipal field. John De Witt Warner contributed an article on *Civic Centres,* showing how European cities, both ancient and modern, group in a special quarter their handsomest buildings, and states that civic pride is forcing American cities to follow this idea. Other articles are *The Structure and Growth of Cities* by Richard M. Hurd; *Municipal Government in Australasia* by T. George Ellery. Under "city monopolies" are articles on *The Street Railway Franchises in New York;* an editorial on *Municipal Electric Lighting in Chicago,* containing a report of the accountants; *Economic and Social Factors* by John R. Commons, and *Milan Street Railways* by F. Friend Magrini. Frederick A. Wood writes on *The Massachusetts Franchise Tax* and Lewis Windmüller on *The Vexations of City Pedestrians.* New York, N. Y. Price per year $2.00; per copy 50 cents. Issued quarterly.

The Imperial Health Manual is issued by the Imperial Health Department of Germany, and edited by Anthony Roche. This little manual is in reality a popular physiology, and would be of great benefit to communities if introduced in the curriculum of elementary schools. Published by Baillière, Tindall & Cox, London, England. Cloth, 304 pp., three shillings.

Mechanical Installation in the Modern Office Buildings is a reprint from the *Translations* of The American Society of Civil Engineers. The article was written by Charles G. Darrach, M. Am. Soc. C. E., and contains the discussions of the subject by other members of the society. The author presents in this paper the various necessities in the modern office building, and gives some general rules for supplying these necessities, which experience has shown to be the best. He considers the best methods of heating, ventilation, lighting, water supplies, and sewage disposal, policing and fire protection, etc.

THE Supreme Court of Washington, D. C., has at last settled the matter of the postage required to be paid by the *Official Railway Guide* of New York, and other similar publications. It is decided by the Court contrary to the opinion of the Postmaster-General, that the *Official Railway Guide* is entitled to second-class rates, which have always been enjoyed by it heretofore. We are glad to see that the *Official Railway Guide* has won this case, for all who have had the use of it will testify to its great value. Price per year $8; 75 cents per copy.

MUNICIPAL REPORTS RECEIVED

The report of the Commissioner of Public Works of Hudson, N. Y., has reached our office.

The annual report of Mr. F. A. Blades, Comptroller of the city of Detroit, Mich., has reached us.

City Engineer John H. Emigh, of North Adams, Mass., has kindly sent us his annual report for 1901.

We have also received the report of the Board of Managers of the Municipal League of Philadelphia, for 1900 to 1902.

Our thanks are due Mr. William I. Davies, City Clerk, Youngstown, Ohio, for a copy of the annual reports for 1901.

Supt. J. Crowell Mundy, has sent us the annual report of the Street and Water Commissioners of Newark, N. J., for the year 1901.

Mr. John B. Hein, Superintendent of Water Works, of Madison, Wis., has sent us the annual report of his department for the past year.

We have received a copy of the twenty-ninth annual report of the Board of Police Directors of Dayton, with the compliments of Supt. John C. Whittaker.

We are indebted to Mr. George H. Davies, of Ironton, O., for his annual report, and that of the Water Works Trustees, for the year ending March 1st, 1902.

We are in receipt of the two volume report of the State Board of Health of Pennsylvania, for 1900, with the compliments of Dr. Benjamin Lee, Secretary of the Board.

The second annual report of the Department of Public Safety of Albany, N. Y., has reached our office, and our thanks are due Chief M. E. Higgins of the fire department.

We have received a report of the Executive Committee on Municipal Improvements for Harrisburg, Pa., which contains its recommendations for the beautifying of that city.

The cloth bound volume containing the reports and papers on the American Public Health Association which were presented at the twenty-ninth annual meeting of that body, held at Buffalo, September, 1901, has reached us.

Mr. Henry A. Knight, Superintendent of Street Lines, of Worcester, Mass., has favored us with a copy of the annual report for 1901.

The ninth annual report of the Street and Park Commissioners of Manchester, N. H., has been received.

A paper on the legal and sanitary aspects of sewer construction, which was read by Mr. John P. Force, C. E., Columbus, O., at a meeting of the State and local Boards of Health of Ohio, held on the 17th of January, 1902, has been sent us by that gentleman.

MUNICIPAL REPORTS REVIEWED

BINGHAMTON, N. Y.—We are indebted to Mr. John Anderson, Secretary and Superintendent of the Water Board, for the Annual Water Report of 1901. Financial report makes a good showing. The total receipts from all sources for the year ending December 31, 1901, amounts to $106,928.74; disbursements, $79,075.96. The amount of cash on hand is distributed as follows: In the sinking fund $50,000, in special fund $23,989.62, in open accounts $42,902.28, in the Binghamton Trust Company $24,028.50, making a total of $140,920.48.

The total number of gallons of water pumped during the year amounted to 2,247,391,834 gallons, making a daily average of 6,157,237 gallons, and a per capita consumption of 160 gallons. The waste of water is reported on the increase each year. Although the general use of meters has been recommended, the suggestion has not been carried out and so the waste continues.

The coal bill for the year amounted to $5,616.15, for 2,320 tons.

The first of this month there will be completed a mechanical sand filtration system, constructed by the Norwood Engineering Company of Florence, Mass., at an expense of $80,000, with a daily capacity of 10,000,000 gallons. An electric dynamo has lately been installed, which has reduced the expense for lighting the pumping station.

Binghamton charges $4 a year for each family, not exceeding six persons for the use of one faucet and a corresponding low flat rate for baths, laundry tubs, etc. The meter rate for a daily average of less than 1,000 gallons is 20 cents per thousand gallons, which is larger than is charged in most cities operating their own plants. The Superintendent recommends a reduction of meter rates for domestic use.

PAWTUCKET, R. I.—In submitting his report of the year 1901, Mr. William H. Barclay, Commissioner of Public Works, states that economy had been the order of the year. The total expenditures in the highway department were $42,000 less than for the preceding year, and the amount spent on sewers nearly $20,000 less than that of a year ago. The water department made its usual good showing and was able to add to the sinking fund the sum of $93,332.95. The maintenance expenses were practically the same as those of the year before, but the receipts were considerably more.

In the sinking fund there is now credited to the water department $430,093.74. Commissioner Barclay again recommends that an additional pump of a capacity of 12,000,000 gallons be purchased, for, although the present pumps can supply the 10,000,000 gallons needed daily, any accident to the pumping plant would seriously affect the water service.

There are now in use in the city 6,597 meters, 281 having been set during the past year. The repairs to these meters during 1901 amounted to $1,433.72.

Expenses for maintaining the department amounted to $102,568.68 and for construction $28,996.92. From 1879, when the works were installed, the works have cost the city $1,866,445.17. Mr. John H. Walker, Chief Engineer of the pumping stations, reports that the expenses for running the three stations during the year were $21,834.03. A total of 2,526,517,462 gallons of water was pumped into the reservoir at a cost of $8.60 per million gallons. To raise 1,000,000 gallons one foot cost the department $0.32. The average daily consumption of water for the 39,231 inhabitants of the city was 6,927,445 gallons.

The total expenditures for the highway department aggregated $52,859.04 and for the sewer department $17,983.89. In his report to the Commissioner, Mr. G. A. Carpenter, the City Engineer, calls attention to the great value of keeping continuous records of all work done in the city so that valuable data will be at hand for reference whenever it is desirable to investigate the value of any kind of pavement, etc. The bituminous macadam that has been laid on several streets has caused many officials of other cities to visit Pawtucket. The engineer reports that the pavement has given every satisfaction and that time alone is needed to establish its absolute durability. The engineer also recommends that means be taken to provide some suitable place for protecting all the records from fire, as they would all be destroyed should a fire occur in the building in which they are kept.

TAUNTON, MASS.—Mr. George A. King, City Engineer of this city, has favored us with a copy of his annual report for 1901. A large portion of the work of his department has been done for the Sewer Department. Grade crossings have been worked upon for the Commissioners appointed by the Superior Court. Cemeteries have been laid out by the Engineer and 30,000 square yards of concrete walks. He states that tar walks should be made during warm weather and not later than September. He recommends that a record of pipes laid underground be filed in the office of the City Engineer and that all bridges be rigidly inspected and well painted. The expenses for the year totaled $1,433.60.

The report of the Board of Sewer Commissioners, bound with the Engineer's report, shows that the expenses of the department amounted to $71,506.49, including labor and supplies, and for maintenance footed up $3,461.16.

PEEKSKILL, N. Y.—The annual message of President Henry H. Lane, of the village of Peekskill, is full of suggestions for the improvement of the village. He states that, while there is a small deficit in the accounts, this is due largely to the fact that the smallpox case cost more than the estimated tax budget.

Mr. Lane says that the village should own its own road building plant, consisting of a stone crusher, screen and steam road roller. He calls the attention of the Board of Trustees of the village to bituminous macadam water-proof pavement. He says: "It is a new pavement made of hard crushed stone cemented together with bituminous mortar, and is being used in many cities. It combines the advantages of asphalt and macadam and overcomes most of the objections of each, such as: slipperiness and the liability of the asphalt to crack and disintegrate; second, the mud, dust, rapid wear, washing out and unsanitary features of macadam. In addition, it gives a more solid and dense, and therefore more waterproof and durable wearing surface, than either asphalt or macadam. It is claimed for this new pavement that it has several times more life than asphalt pavement, and that it is being laid at a less price than either asphalt or brick in the New England states. Prof. A. W. Dow, Government Inspector of Pavements, of Washington, D. C., says of the pavement, 'It exceeds in good qualities any pavement I have ever seen laid.' "

Sixty acres were donated by Senator Depew to the village for a park and this will be improved. The purchase of a chemical engine is recommended and the services of the Browder life saving net are highly commended.

As the village owns and operates satisfactorily the water works, the installation of a municipal lighting plant is urged by the President.

NEW BEDFORD, MASS.—Like the city of Detroit, Mich., the Park Commission of the city of New Bedford, Mass., issues a most beautiful report of the work during the past year. The report is printed on heavy coated paper, and is illustrated by numerous fine half tones, and is altogether a work of art. The Commission discusses the subject of improving the park reservations and makes the statement that "the general provision of public parks is doubtless one of the most potent factors in the reduction of the death rate of America." The Commission quotes many authorities to back up this statement and asks that the parks of New Bedford be greatly increased during the coming year. The city at present has a park area of about twenty square miles, which, with its population of 62,442 inhabitants, gives about .205 acre per capita. The report of Superintendent Thomas W. Cook is found with that of the commissioners, and he quotes many eminent authorities in support of what the commissioners have already said as to the value of adequate park area.

THE NEWEST THING IN STREET CLEANING APPARATUS

Tested by Commissioner Woodbury of New York—Favorably Impressed—Would Require 200 to Keep the Metropolis Clean—Forty Now in Use in St. Louis and Milwaukee

COMMISSIONER Woodbury, of the Street Cleaning Department is bound to make New York City the cleanest city in the world. To this end he is willing to test every contrivance or apparatus brought to his attention which can be utilized to bring about this desirable end. A few weeks ago he tried a pick-up sweeper with nominal results. He is now testing the most unique cleansing apparatus yet brought to his attention. It consists of a tank made of steel, holding 618 gallons of water, which is charged with compressed air, used for forcing the water through a fine slit in a pipe which juts down from the end of the tank at the rear of the wagon, from which is thrown a fine sheet of water. This spray of water is thrown with such force as to loosen and drive the dirt and refuse to one side of the street into the gutter. In traversing the street it covers a space of about eight feet, and commences to work in the centre.

It takes about 15,000 gallons of water to clean a mile of asphalt pavement 26 feet wide. After the system is installed and been in use a few days, going over the street once a day will keep it in a perfectly clean condition, but to start with it is necessary to go over it two or three times in order to soften and remove the dirt which has dried to the pavement when in a slimy, sticky condition. One machine cleaned Fifth Avenue from Twenty-third Street down to Washington Square in less than three hours' time, beginning work at about five A. M. One machine, with a clear street, under ordinary conditions, will clean 60,000 square yards in a day. Unlike street sweepers it can do its quickest and most effective work on a wet day, as then the dirt of the street is thoroughly loosened from the pavement and it becomes a comparatively easy matter for the spray of water to push the dirt into the gutter. Under such conditions more than 60,000 square yards could be cleaned in a day. For a stone street it takes about 10 per cent. more water to clean the same amount of pavement and 10 per cent. more time.

CLEANING STREETS IN THE TENEMENT DISTRICTS

There are about 1,000 miles of paved streets in Greater New York which could be cleaned by this process, and on a rough estimate it would require two hundred machines, working sixteen hours a day, to clean the streets once a day. The three machines which are now being tested in New York are soon to be shipped to Liverpool as they have been sold to that city. Paris, Berlin and a number of English cities have already tested the machines and determined to put several of them in immediate use, as they found the flushing, for it is really a flushing machine, which it gives the streets, cleanses the surface more thoroughly than any machine or hand method hitherto employed. Sanitarians abroad look upon this new contrivance with much favor, inasmuch as it frees the street from the fine dust, and so removes one of the dangers which threaten the public health, as the dust of the street is laden with disease germs. By this method the dust is not only settled but driven into the sewers. Forty machines are now at work in the cities of St. Louis and Milwaukee, and they have been tested and favorably commented on in the cities of Harrisburg and Philadelphia, Penn., and Washington, D. C. They will be tested in Jersey City this week.

THE MACHINE AT WORK ON FIFTH AVENUE

Capt. Gibson, Deputy Commissioner, when asked for his opinion about the

work of the new street cleaning apparatus, remarked, "I am very favorable impressed with the work of this machine. It is the best thing in its line that I have seen, but it is too high priced. I do not expect to pay the price—$1,000 for each machine—which is asked by the manufacturer. If we do succeed in getting a fair price we would not attempt to clean the entire city, as I am of the opinion that it would not be wise to use it on stone pavements, as it would wash the grouting or filler out from between the stone blocks and so spoil the pavement. It will only be used on asphalt streets, and sixty machines would be amply sufficient to perform our work.

"We made a comparison" he continued, of the work of this machine with one of our flushing gangs and found that whereas the machine performed a certain amount of work at an expense of from 15 to 20 cents per thousand square yards, the cost of doing the same work by the hose gang amounted to from 35 to 40 cents per square yard, and the machine did the work in less time than with the hose. I am told that the city of Washington cleans its streets at a less cost per thousand square yards than any other city in the country, and the contract price for that city is eighteen cents per thousand square yards. I am of the opinion that the work can be performed for less money by the use of these machines."

AN IMPROVED METHOD OF FILTRATION

PROBABLY not more than one-third of the towns and cities of the United States have made any effort to insure wholesome drinking waters; the remainder are either indifferent or confess ignorance of the subject. More than half the people are living in total disregard as to whether they are drinking pure or contaminated water.

Spasmodic efforts are made now and then by State Legislatures to provide legal protection against contaminating water ways—often a public effort, where rivers traverse several States—with wastes from factories, washings from farms, drainages from villages or towns, all carrying an appreciable quantity of filth which contaminates and renders these waters unfit for domestic uses.

What, then, can be done to make these waters of disease and pollution, wholesome, clear and pure? Extensive slow filter beds, with their expensive maintenance in keeping the sand beds to a standard of purity, or a less costly, rapid filtration system, with or without a chemical treatment?

On account of the expense attached, the first system is not always feasible. The latter method most generally employed, has filtration through gravel or sand and for this purpose, a layer 30″ to 48″ thick of clean sand, mixed in some cases with charcoal or coke, is being used. The sand being loose, lies at the bottom of the tank and all sediment in the water settles upon the sand which forms the bottom of the filter, which soon becomes gorged and clogged, so that the filter must be thrown out of use while it can be cleaned by some mechanical means. Hitherto an agitator or mechanical rake has been operated, in conjunction with the reverse flow of water under pressure. The system shown in cut, will accomplish better results and avoids the back flow of water along certain channels of least resistance, which have been created in filtration and which must be broken up by the agitator or rake.

The enormous importance of this newer method of filtration with its extreme simplicity in construction are described briefly as follows:

This filter apparatus consists of either a wood or iron tank, with two partitions f. f., or perforated metal plates.

The space between them is filled with fine, sharp sand for about 4/5 of the height. The water, on entering the filter at valve A, passes through the sand and flows off clarified through Valve B. When the filter bed becomes so impure that the cleansing effect decreases perceptibly, the filter must be cleansed. To effect this, valve A is closed and the mud outlet and aircock X are opened. The valve C must be opened and the air compressor L put in action by opening steam valve D. Compressed air is spread by a system of pipes furnished (R) with a number of jet holes, under the entire surface of the filtering material, this producing in it a violent stirring up action, both with air and water, never accomplished by water and agitators alone.

The impurities are thus separated from the filtering material and are washed away, through the mud pipe while the air escapes through valve X. The air compressor must be closed after a few minutes but the water must still flow two or three minutes more in order to remove all the air from the sand and cleanse the latter entirely. All valves are then put in original position. The washing out of the filter takes but five minutes.

Fig. II shows a filter plant of 2,500,000 gallons in 24 hours, one air compressor is quite sufficient for the whole battery.

If the water in its natural condition does not become sufficiently clarified by passing through the filter it is necessary to use a precipitating agent which is constantly added to the water in a liquid state. The precipitating agent and the apparatus for regularly introducing it can only be determined upon when all the conditions are known.

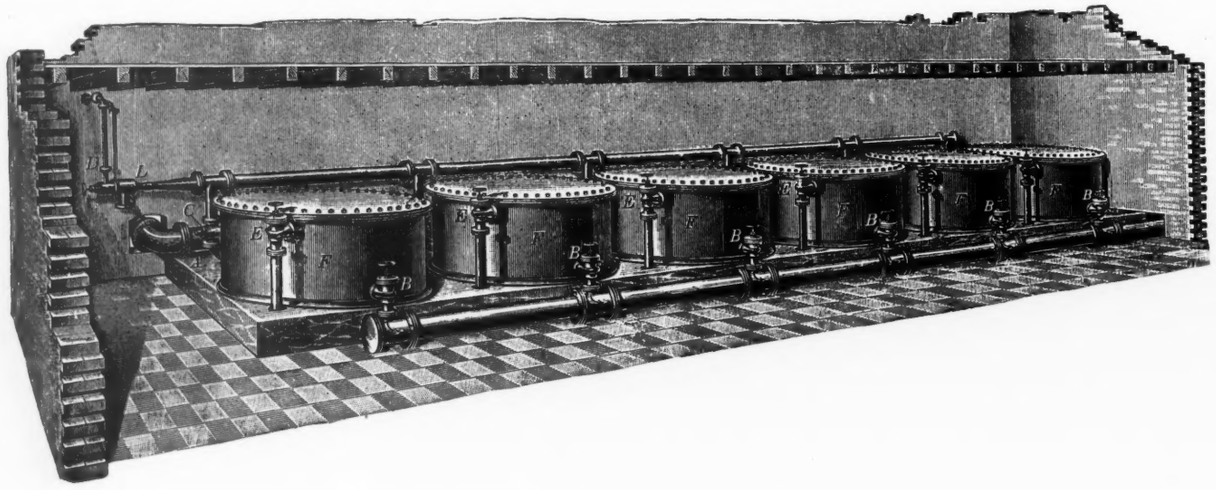


FIG. 2. FILTER PLANT OF 2,500,000 GALLONS CAPACITY PER DAY

The marked advantages of the Automatic Water Purifying Company's filters, "patent Reisert" are,

(1) That large quantities of water can be thoroughly filtered by a proportionately very small filtering surface,

(2) That the filtering material needs no renewing except in periods of 5 to 7 years,

(3) That it can be cleansed daily without any appreciable loss of time or of water.

The filtering material of all other filters, must at short intervals

be washed by complicated and lengthy means, and it must also be frequently renewed. Besides these inconveniences and difficulties during work, comes the disadvantage of the great space they occupy. With regard to the novelty of the apparatus and the advantageous method of working it, it is again to be noticed in installing mechanical filters that simple back flowing of the water is quite insufficient for the perfect washing of the filter, because the back flowing water forces a channel along the weakest part of the filtering material and

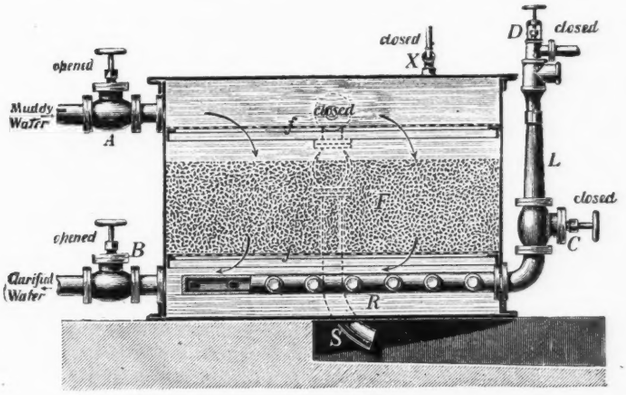


FIG. 1. SHOWING THE WORKING OF THE FILTER

runs through so that the largest part of the filtering material remains still impure. Only by a regular distributing of compressed air beneath the filtering material is it rendered possible to secure its rapid and complete cleaning.

Further information on this second type of filters built by the A. W. P. Co. can be had by applying to the New York office.

THE COST OF ACETYLENE LIGHTING FOR TOWNS

ACETYLENE lighting for towns and villages has come to stay. Many of the smaller municipalities which hitherto have been obliged to depend upon old kerosene lamps for light, have now become as well lighted as any of the larger cities and at an expense within their means. Where high priced gas or electric lights is among the impossibilities for a smaller municipality the acetylene gas plant is practicable. And there is no reason why the city should not profit to a large extent by this method of lighting its streets, for it is thoroughly adaptable to the needs of the larger city as well as to the village or town.

Many of our readers will be interested in this new form of lighting, particularly when they have for consideration a definite estimate as to the cost of maintaining a plant of a given size. Through the courtesy of the Abner Acetylene Gas Co., of 36 La Salle St., Chicago, Ill., we are enabled to give an approximate estimate of the cost of constructing and operating a plant large enough for town lighting. The estimate is based upon a thousand-light system. The supplies necessary for pipe mains are, 1,000 feet three-inch, 5,000 feet two-inch; 3,000 one and one-half inch, 1,000 feet one-inch. Fittings for mains and service pipes, as follows: Five cut-off cocks, laying and testing 10,000 feet of pipe, 10,000 feet of trenching, 50 service pipes out of the curb, 50 service-cock boxes, 50 service pipes to street lamps, 30 standard street lamps, 20 boulevard street lamps, 30 wood street lamp posts, 20 iron street lamp posts, 50 meters of 750 candle power, one 1,000-light generator and one building 14x18 feet inside. The services of a superintendent should be included also.

A plant as above described can be installed at a cost of from $3,500 to $4,500. The cost can be increased or decreased according to the location of the town and the amount of pipe laid. It is not always necessary to lay all the above pipe at the start, but it can be laid as conditions demand and as the number of gas consumers increases.

A town or village installing a plant of this size, on a conservative calculation, would be able to pay the cost of the entire plant within five years. This statement is based upon the following estimate:

First, it is assumed that there would be one hundred meter and city consumers who would use, approximately, 1,200 cubic feet of gas per day, or 36,000 cubic feet per month.

The cost of producing this amount of gas and distributing it to the customers would be as follows:

The carbide, costing $70.00 per ton delivered and averaging four and one-half cubic feet to the pound	$280
Labor, cartage water office and lighting	100
Leakage and taxes	25
Total cost of operating per month	$405

The revenues from this plant would be as follows:

From consumers at $15 per thousand cubic feet (this being equivalent to city gas at $1.50 per thousand cubic feet, and is sold as high as $3 per thousand cubic feet when population is not over 3,000)	$490
From 30 street lamps per month	50
Total receipts per month	$540
Net profits per month	$135
Net profits per year	$1,620

After allowing a liberal sum for depreciation, interest on bonds, etc., this would leave a balance large enough to liquidate the total cost of installing the plant at the end of five years. The officials of our smaller municipalities, particularly, as well as those of larger municipalities, will conserve the interests of the taxpayers if they investigate this system of lighting carefully. We feel assured that the Abner Acetylene Gas Company will extend every courtesy to the readers of THE MUNICIPAL JOURNAL who desire to look further into the matter.

THE ALBANY DAY LINE

The operation of the Hudson River Day Line steamers began on May 28th and 29th. The steamer "Albany" made the first trip up on Wednesday, the 28th, leaving New York at 8.40 from Desbrosses Street Pier, and Twenty-second Street Pier at 9.00 A. M., making the usual stops at Yonkers, West Point, Newburgh, Poughkeepsie, Kingston Point, Catskill, Hudson, and arriving at Albany at 6.10 P. M. The steamer "New York" went up on Thursday, making the service complete. The advent of these great pleasure craft—built and operated purely in the interest of tourist travel—is always considered in the Hudson Valley as an official announcement of the arrival of summer.—*From Four Track News for May.*

THE LUXFER PRISM

Luxfer prisms are four-inch square sections or large sheets of crystal glass having a smooth outer surface and an inner surface divided into a series of small, accurately formed prisms. The small sections are united into plates of any size desired. These prisms, when conditions permit, are installed in the upper parts of show windows in the place of plate glass for the purpose of increasing the sunlight on the interior, as by means of the prisms the rays of light are thrown horizontally into the room so that the light in the rear is increased by a large per cent. The value of this method of increasing light in rooms of offices, etc., has long been recognized and its use becoming more popular daily. Where a street or court is very narrow, or buildings opposite quite high, very little direct light from the sky will enter the room. In order to receive the requisite amount of light upon the prism plates, it is necessary to set them at an angle to the vertical, a position similar to that of awning. The prism plates are supported in plain or ornamental iron frames at the top of the window and securely fastened to the outside face of the wall. By this means it is possible to lighten the rear of an office, store or other public place, to a very large degree. The Luxfer Prism is now in use in more than 5,000 prominent buildings throughout the United States. A descriptive catalogue will be sent to any address upon receipt of request by The American Luxfer Prism Co., 372 Fulton St., Chicago, Ill.

THE PITTSBURG METER TEST

THE following record of a test made of the Pitsburg meter by the authorities of an Ohio city last fall, speaks volumes for the accuracy and durability of the meters manufactured by this company. The meter tested was known as "Disc Water Meter No. 26010." It was secured by the water department of a prominent city in Ohio from a neighboring municipality, and the test given below was conducted without the knowledge of the company. Comment is not necessary as the result speaks for itself:

No. of Test.	Accuracy test after having registered.	Press. lbs.	Amount indicated by meter Diameter of opening.					Average per cent. error + or — each test.
			⅝ in.	½ in.	¼ in.	⅛ in.	1-16 in.	
1st.		50	100	49.6	24.7	10.2	4.7	— 0.4
2nd.	213,105 Gallons	50	99.8	50	24.7	10	4.5	— .05
3rd.	375,000 "	50	99.6	49.9	25	10.1	4.4	—0.5
4th.	586,762 "	50	100	50.2	25.2	10.3	4.3	— 0.0
5th.	1,150,425 "	50	99.4	49.9	25	10.2	3.8	— 0.9
Amount indicated by tank each test		100		50	25	10	5	
Average per cent. error + or — each flow				— 0.25	— 0.16	— 0.32	+ 1.6	— 13.2

The above appears like a phenomenal showing for a water meter when both accuracy and durability are considered, but it is only what we expect of the meters we make, as we sell and guarantee them to give long, satisfactory and accurate service.

VAPOR LAMPS FOR STREET LIGHTING

THE Cleveland Vapor Lamp is coming into general use as a means for illuminating streets. A friend of THE MUNICIPAL JOURNAL, in speaking of the efficiency of this lamp states that he would recommend it for three reasons, (1) economy, (2) lighting capacity, (3) utility.

"It is only a case of figuring it out" he remarked, "to prove to yourself what a vapor lamp costs per night. With gasoline at eight cents a gallon what will one quart cost? Just two cents for twelve hours. That is what it costs to light streets per night per each vapor lamp.

"If electricity is used it means dollars upon dollars invested in a power house, engines, armatures, miles of wires and a multitude of other items. All this means expense. If it is gas it means dollars upon dollars in a gas house, engine, retorts and miles of pipe. All this means expense.

"If it is vapor it means cents upon cents for a fixture. Then two cents a night. You always get a 75-candle-power light and a light that penetrates farther than electricity or gas.

"Do you know why the lighthouses throughout the world use coal oil as a fuel for their lamps? Because it can be seen farther.

"Do you know why the gas companies use barrels upon barrels of gasoline to enrich their gas? Because they want to give candle-power to their light.

"What electricity and gas lack, gasoline supplies. The vapor that develops and maintains the brightest light is what is consumed in the vapor street lamps."

Full descriptive matter, estimates and all information desired, will be sent to any municipal official desiring to inform himself upon this important question. Address the Cleveland Vapor Light Co., East Madison Ave., Cleveland, Ohio.

—Mr. Charles G. Barrach, M. Am. Soc. C. E., recently read a paper before the American Society of Civil Engineers upon the subject of "Mechanical Installation in the Modern Office Building.

—Bulletin No. 101, issued by the Sprague Electric Co., 527 West 34th Street, New York City, treating of the "Direct Current Generators of the Single Field Coil Type" has been issued, and can be had on request.

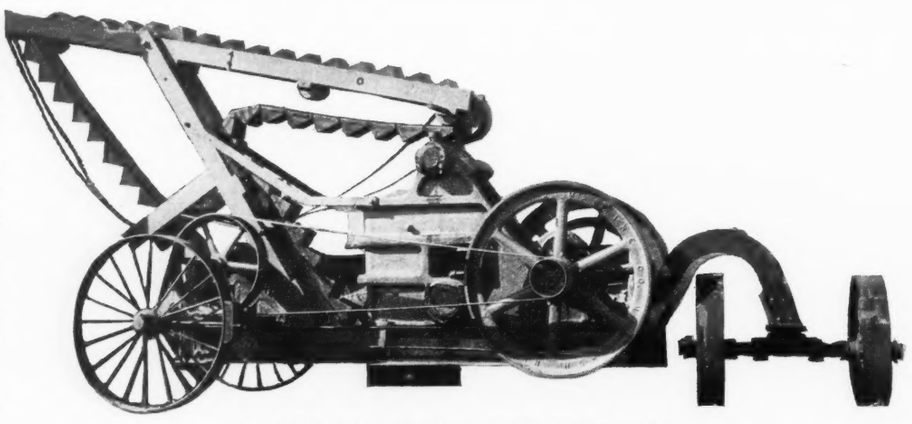
SOLAR PRISM LIGHT

For many years the inhabitants of crowded cities, particularly in the business portions have cried for more sunlight and have cried in vain, because it has only been until quite recently that the need could be supplied. Solar prisms have solved the problem for the dark interiors of our public and office buildings, for, by their use, according to the statement of Prof. Charles E. Norton of the Massachusetts Institute of Technology in his recent report on a series of tests, under certain conditions, the light in a room may be increased fifty times by the installation of prisms. The installation of solar prisms has often effected a saving in lighting cost amounting to 100 per cent. per annum on the cost of the installation. Under average conditions the direct light from the sky entering a room through sheet or plate glass strikes the floor within a few feet of the window and is mostly absorbed. For this reason the rear part of the room is dark. By the installation of solar prisms at the window openings the direction of the entering light is changed and projected horizontally into the room. Solar prisms do not create light; they simply distribute and diffuse the excess of light at the window. A 12-page booklet fully describing the advantages of solar prisms can be had by addressing Jones & Le Baron, 625 Sixth Ave., New York City.

A PORTABLE STONE CRUSHER

GREATER progress in the construction of good roads will be made in the next ten years than has been made in the past one hundred years. This achievment will be due to the perfection attained by the inventive Yankee in the building of modern road-making machinery. The least in importance of these numerous contrivances for highway betterment is not the stone crusher. This powerful machine which has made possible the utilization of the hard heads, trap rock, granite and other suitable road-building stone found in numerous sections of the country, is one of the wonders of this road-building age. The crusher as fitted with a 16-foot elevator, shown by the accompanying illustration, manufactured by the Climax Road Machine Co., of Marathon, N. Y., is one of the best in the market.

Of the different styles of stone crushing machines manufactured by this company, this is one of the best adapted to highway construction, as it is mounted on wheels and adapted in every way to this sort of work. This style of portable outfit, it is said, originated with this concern, and it is to-day the only manufacturer which offers a perfect crusher, elevator and chute screen, mounted on four wheels,

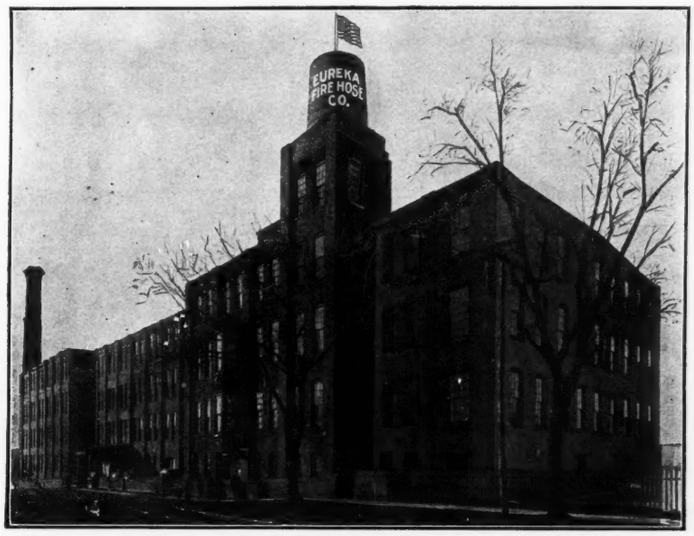


PORTABLE STONE CRUSHER WITH CHUTE CLOSED

which can be readily moved without detaching the elevator. The view given here shows the elevator folded with everything in readiness for transportation. This company manufactures all kinds of road-making apparatus, and will send a descriptive catalogue to any address upon request. It manufactures not only portable stone crushing plants, but the reversible road machine scraper, which is so perfectly adjustable to every condition met with in the various parts of the country; the automatic distributing wagon, the rotary screen, the steel girder bridge, the portable engine on wheels with locomotive boiler, the new reversible horse roller, etc., etc.

EUREKA FIRE HOSE

THE Eureka Fire Hose company, which was established in New York City in 1875, has recently moved its plant to Jersey City, N. J., to a modern factory, with a combined floor space of over 100,000 square feet—nearly two and one half acres. All the machinery and apparatus used in this building is the invention of employes of the company and was built in the factory, and all the cotton and linen



FACTORY—EUREKA FIRE HOSE COMPANY

yarns are specially spun and tested to meet the company's very rigid requirements—which, it is claimed, are more than 13 per cent. above the highest of any previous standard. The rubber is specially prepared, and must accord with the company's specifications. After acceptance it is inserted into the hose.

All the hose manufactured is antiseptically treated by methods which the experience of over twenty-five years has shown to be the best for the purpose. By this treatment the yarns or fabrics are lightened, and the yarn needs no sizings or weighings of any kind. The twisted yarns are then woven into the many various fabrics manufactured by the company, each one of which calls for a special loom, each operated by its own individual operator. After having been woven, it is inspected inch by inch.

The hose is next subjected to anti-septic, anti-mildewing treatment according to formulas specially prepared for the company. With ordinary care the hose will not mildew. Inserting the rubber lining is not undertaken till the lining tubes have been examined for foreign substances, and well brushed and cleaned outside and in. The tubes are drawn in by special machinery, live steam being used to inflate the rubber linings against the inner surface of the fabric tube, whereby the adhesive cement coating on the outside of the rubber tube is softened, and the rubber cement, being vulcanized, fastens the two together. During this process the hose is again examined for flaws, and various colored threads are inserted between the fabric and lining. These are also woven into many of the company's fabrics, the dates of whose manufacture and lining are thus determined.

The hose couplings are all cast and turned according to the company's specifications, ready for threads, and are applied by means of an hydraulic expander. After coupling, each length of fire and underwriter hose is tested for leaks by being subjected to a hydrostatic pressure of 200 pounds. The company's rubber-lined, solid, single-woven, multiple cotton fire hose is two and three ply. The Paragon is two-ply and the Eureka, three-ply. The different plies are woven simultaneously and are, therefore, perfectly uniform throughout in tension and construction. The rubber lining is the best quality lapped-jointed three-calendered, Para rubber tubing, the edges of the three sheets rolled into one are lapped and cemented together; the tube is run into a vulcaniser. The lap-joint is thus vulcanised together. After it has been externally coated with rubber cement for adhesion only, it is ready for insertion into the hose.

The most serviceable linings are not less than eighteen-gauge and not more than fifteen—the Navy Department of the United States and the Factory act specify that the thickness must be within these limits.

The Eureka Hose Company has received a gold medal at every exposition at which it has exhibited its goods, and at the Paris exposition, Mr. J. Van D. Reed, President of the Company, was awarded the cross of the Legion of Honor, as a recognition of the excellence of the company's exhibit.

♠

THE OJAI NATURAL ASPHALT

THE "Ojai" is a brand of California asphalt which is refined by the Ojai Natural Asphalt Co., Phelan Building, San Francisco, Cal. This brand is produced from natural asphalt, both liquid and hard, all of standard grade, in an open kettle plant. The greatest care is taken to prevent any burning or over heating of the material while being treated, the greatest heat attained at any one time being 370 Fahr. thus retaining all the life and tensile strength in the material. This company long ago adopted for one of its mottoes, "quality not quantity."

In the selection of material from which to produce this superior article the company has rejected the "residuum of oil" or "still bottom" product, and used only a genuine natural asphalt, refined from the heavy liquid and semi-liquid asphalt found in extensive deposits in the upper Ojai Valley, Ventura County, Cal.

This high grade natural asphalt will be found of unsurpassed quality for street paving, sidewalks,, railroad platforms, reservoir linings, floors of basements, stores, slaughter houses, barns, stable and stall floors, cow houses, creameries ,and dairies, breweries, etc., etc. It is also unexcelled for pipe tubing flues, wharf piles, exposed woodwork of bridges and roofing. City engineers, street superintendents, boards of public works, mayors or any other city official who wishes to make further inquiries about this brand of asphalt, can secure further information by addressing the company.

HOSE WEAVING DEPARTMENT—EUREKA FIRE HOSE COMPANY

♠

—The Loraine Steele Co., of Loraine, O., and Johnstown, Pa., we are informed, removed its New York City offices from the Battery Park Building to the Century Building, 74 Broadway.

NOTES ABOUT THE TRADE

—The Wabash Engine Company, of Wabash, Ind., recently issued a 12-page catalogue with covers, illustrated with numerous half tones. It describes the Wabash gasoline engine.

—Mr. Thomas C. Clifford, formerly representing the Union Water Meter Co. has been appointed general agent of the Pittsburgh Meter Co., with headquarters at East Pittsburgh, Pa.

—The Snider-Hughes Co., Cleveland, O., has issued a general catalogue, No. 11, descriptive of its steam pumps, high-duty pumping engines, hydraulic machinery, air compressors and air-lift plants. A copy of the catalogue will be sent to any address upon request.

—Mr. J. M. Wright, formerly manager of the Barber Asphalt Company in the states of Ohio, Indiana and Michigan, and later president of the Alcatraz Paving Co., was recently elected Vice-president and Director of the Warren Brothers Company, of Boston.

—The Diggs Fire Extinguisher Company, 141-143 Centre street, N. Y. City. received more orders during the month of April than any other month in its career, which goes to prove the satisfaction the "Diggs-Upright" is giving, and that the public is alive to the necessity of protection in case of fire.

—About June first the Edson Manufacturing Co., of Boston, Mass. will remove its entire business from its present location, which it has occupied for nearly half a century, at 132 Commercial St., to No. 255-257 Atlantic Ave., between Milk and India Streets. It will interest our readers to know that the steering gear, wheel and ball-bearing attachment used on Emperor William's yacht Meteor, was designed and built by the Edson Manufacturing Co.

—We are in receipt of a copy of a descriptive catalogue gotten up in rather a unique style by the Hersey Manufacturing Co., makers of water meters and water works appliances, of South Boston, Mass. It is printed upon sheets of paper of legal cap size and folds up like a legal document, making a convenient shape to be mailed in a large envelope. It takes up the subject of water meters as manufactured by this company and uses numerous illustrations to very good effect. It is a good document to have on file.

—The sanitary readers of THE MUNICIPAL JOURNAL, as well as all others who are actively concerned in conserving the health of the city, will be interested in a 12-page catalogue issued by the Edson Manufacturing Co., of Boston, Mass., which deals with the Edson Odorless Excavating system. The pamphlet fully describes and illustrates the simple and inexpensive system for removing the contents of vaults, cesspools and other receptacles. A copy of this catalogue will be sent to any address upon request.

—Sanitarians have long favored the use of floor stones or tiles for public and office buildings and hotels. The Durex floor-stones, as manufactured by the American Fire Proofing and Cement Construction Co., of 1135 Broadway, New York City, are suitable for use in city halls and other civic buildings, court houses and other county buildings, as well as for other purposes. A postal card addressed to the company will bring a copy of the 16-page catalogue showing designs and colors of this particular kind of flooring.

—The summer days draw nigh when the hot winds will blow and make the busy man wish for a cool retreat. Unfortunately all busy men cannot leave the business centres during the hot months, but he can use some of the recent contrivances for keeping cool. One of the best is the Jandus electric fan, manufactured by the Jandus Electric Co., of Cleveland, O., "to keep thee cool." This company has issued a little pamphlet which tells all about its electric fans, and which can be had for the asking.

—Water works people, the fire commissioners of small towns and villages, and others, will find in the 256-page catalogue of Rumsey & Co., Ltd., Seneca Falls, N. Y., much that will interest them. This is the fifty-third edition of the catalogue of this concern. It is handsomely gotten up in red cloth cover, profusely illustrated, and gives a complete description of hand and power pumps, hydraulic and pumping machinery for all purposes. The small fire engines manufactured by this concern have gained an enviable reputation for efficiency.

—Municipal electricans and superintendents of municipal electric light plants, as well as private concerns, are familiar with the Jandus enclosed arc electric lights. The new catalogue which this company has recently issued is so constructed that it becomes a perpetual catalogue, for it is bound in such a manner as to permit the addition of future bulletins issued by the concern. The one recently received by us contains description of its lamps, and appliances, with price list. It will be sent to any address upon request to the Jandus Electric Co., Wade Building, Cleveland, O.

—The Pittsburgh Railway Co., of Pittsburgh, Pa., ordered several specially built sprinkling tanks for the sprinkling of the streets by trolley, from the Studebaker Co., of South Bend, Ind., last month. Although trolley sprinklers have been in use for some time in the cities of Pittsburgh and Allegheny on other street railway lines, it is reported that the new Studebaker sprinkler is a great improvement over those which have been in use. Municipal officials in other cities are generally interested in this subject, and we assume that a descriptive catalogue will be sent to any of our readers who address the Studebaker Company.

—The Concrete Steel Engineering Company, Park Row Building, N. Y. City, is drawing plans for two bridges to cross the Miami River at Dayton, O., to cost $170,000 and $130,000 respectively. The Main street bridge is to be 588 feet between abutments and the Third street bridge 710 feet, with 40 feet roadway and two sidewalks of seven feet each. Bids will be received shortly. Further information can be had by addressing F. M. Turner, City Engineer. The same company has drawn plans, which are now on file, for a 77-foot span at South Bend, Ind., where bids will be opened on June 10, 1902, at 10 o'clock. For further particulars address Town Commissioner.

—With its characteristic enterprise the LaFrance Fire Engine Co., of Elmira, N. Y., has issued a new edition of its catalogue. It contains a full description, with numerous illustrations, of the various parts of the new improved LaFrance piston steam fire engine, portable electric search light engine, Hayes extension ladder truck and fire escape, besides the rest of its numerous products. The catalogue is handsomely gotten up and profusely illustrated. It contains a lot of information which will be of much value to fire commissioners and others. We are informed by the company that it will be pleased to mail copies to any address, upon request.

—Lyles & Mills, of 231 William St., New York City, will send a copy of their 48-page handsome, illustrated catalogue, to any address on request, giving a large number of designs, in which their paneled and embossed steel ceilings are made. The catalogue does not contain a complete set of their collection of designs, but it gives a sufficient number and variety to show what can be done in this line. So far as designs are concerned they may be made to suit individual taste, or in combination conforming to the buildings and uses for which they may be required. The great advantages of steel ceilings are too numerous and too well known even to bear reiteration.

—The American Enamel Brick and Tile Co., of No. 1 Madison Ave., N. Y., has just issued a handsome 48-page catalogue with covers. This catalogue contains a complete description of the products of this concern. Our readers will be particularly interested in that part of the catalogue devoted to the description and illustration of enameled subway tile used for facing the walls of subways, public lavatories, etc. The brick furnished by this company has been used in the Boston Subway to great effect. Under the Southern Terminal Station in Boston, 498,000 enameled bricks were supplied by this concern, this being the largest single subway contract for enamel brick ever furnished by one manufacturer. The bricks are also used for municipal baths, lavatories in public schools, and elsewhere about the city. A copy can be had on request.

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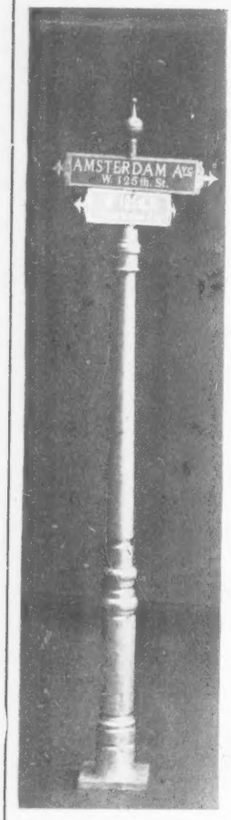

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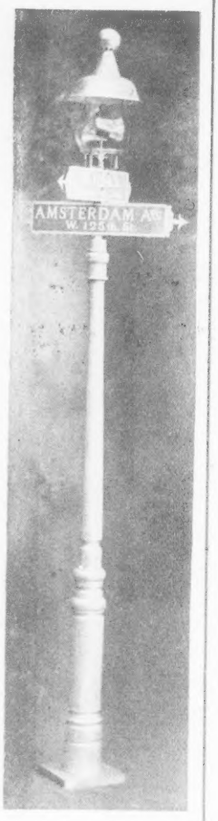

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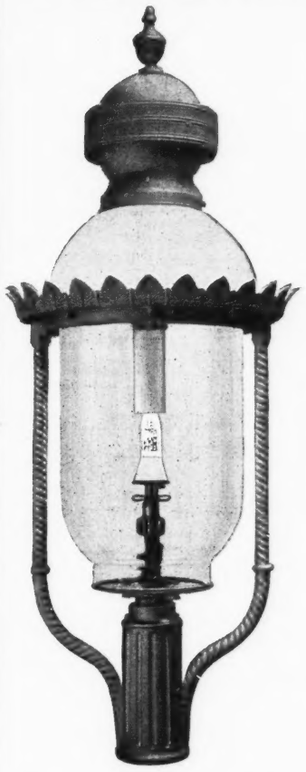
CLEVELAND, 809 Cuyahoga Building ST. LOUIS, 712 Roe Building. SAN FRANCISCO, 712 Polk Street.

Welsbach Street Lighting Company

OF AMERICA



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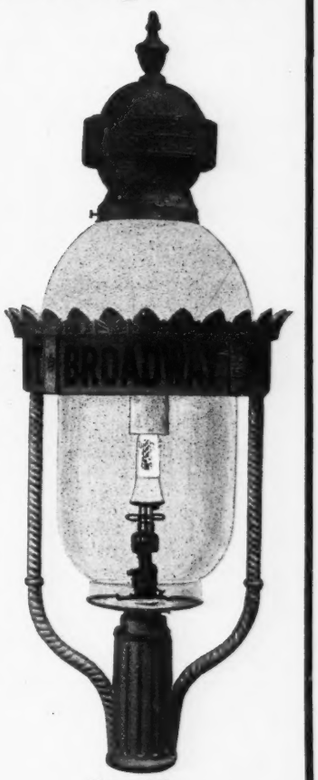

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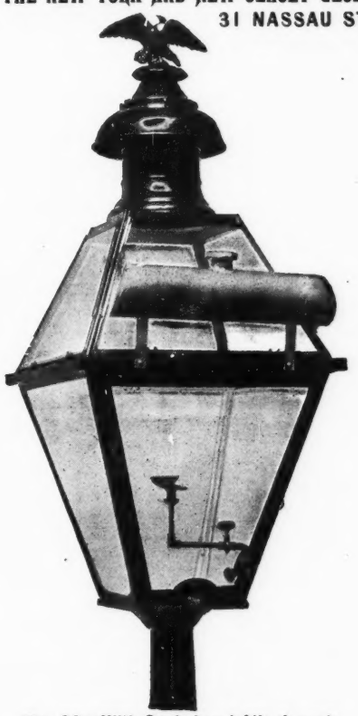
THE NEW YORK AND NEW JERSEY GLOBE GAS LIGHT CO., Ltd.,
31 NASSAU STREET, NEW YORK

GLOBE LIGHT AND HEAT COMPANY,
52 LAKE STREET, CHICAGO.



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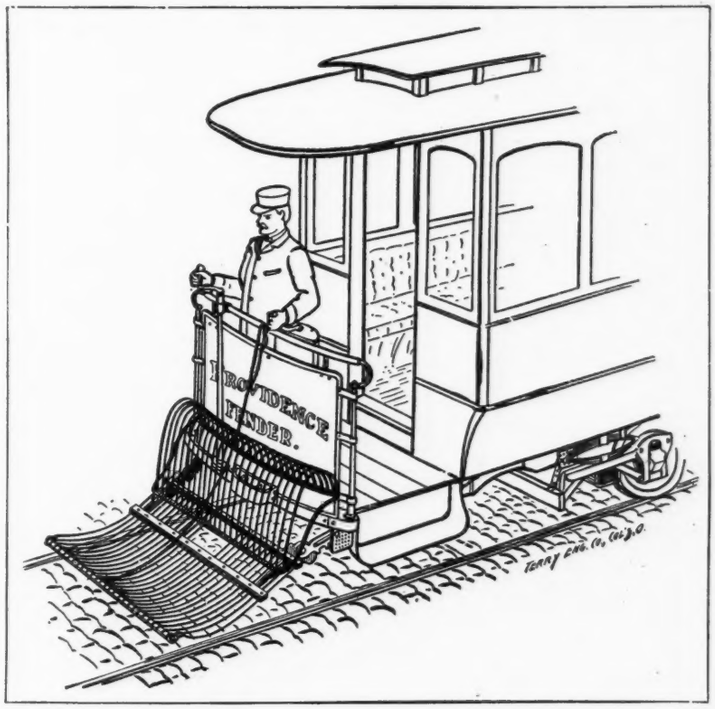

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CLERK'S OFFICE,
CITY OF DULUTH,
Duluth Minn., April 7, 1902.

MUNICIPAL JOURNAL AND ENGINEER,
253 Broadway, City.

Gentlemen:—We hand you herewith order on the Treasurer of the City of Duluth in payment for subscriptions for twenty-eight copies of Municipal Journal and Engineer, to be sent to addresses as per inclosed list. Said subscriptions to date from April 1, 1902.

Those who have been receiving the Municipal Journal and Engineer consider it to be *the journal* for Municipal Officers, the articles being not only sound, but all of them concerning live topics and presented in a much more readable manner than is usually found in technical papers.

Very respectfully,
H. W. CHEADLE,
City Clerk.

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The city agrees to contract for not less than 10 nor more than 20 2000 candle power arc lights.

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Parties securing the contract will be required to give a bond to faithfully perform the same.

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Bids must be accompanied by a certified check for $500 as evidence of good faith.

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Notice to Persons Desiring to Obtain Franchises for Municipal Heating Plant.

CITY CLERK'S OFFICE,
RACINE, WIS., May 7, 1902.

Notice is hereby given that the City of Racine is soliciting propositions for the granting of a franchise for a Municipal Heating Plant.

Propositions to be received at the City Clerk's Office up to and including June 16, 1902, at 8 o'clock, P. M.

Right is reserved to reject any or all propositions.

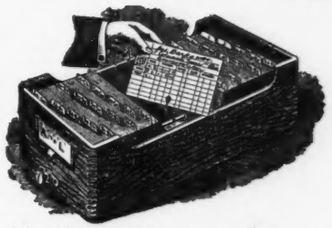
By order of the Common Council.

HENRY J SCHROFF,
City Clerk.

"A finger touch finds the reference"

IN THE

"Y & E" Card Index



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Municipal Journal and Engineer
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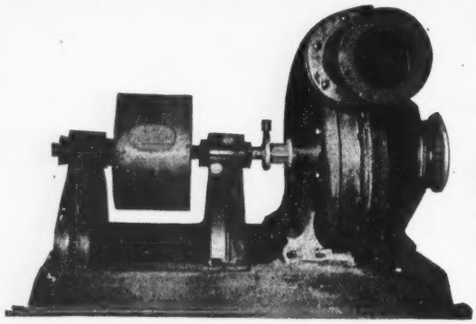

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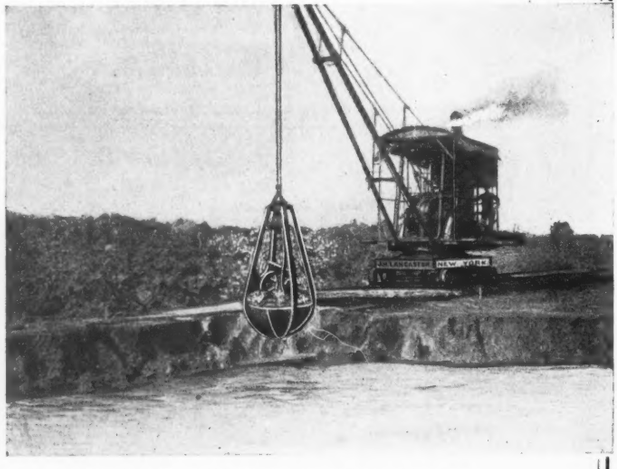

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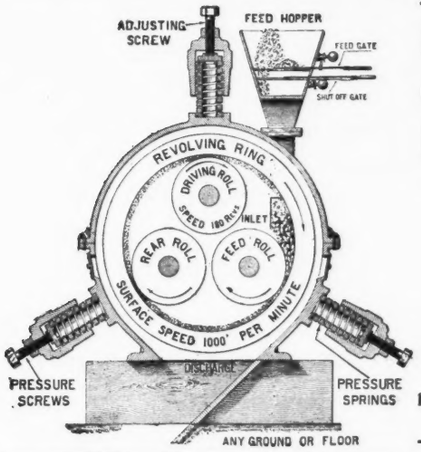

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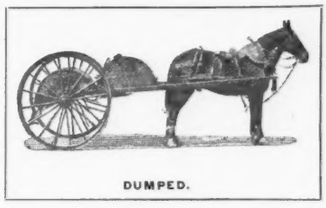
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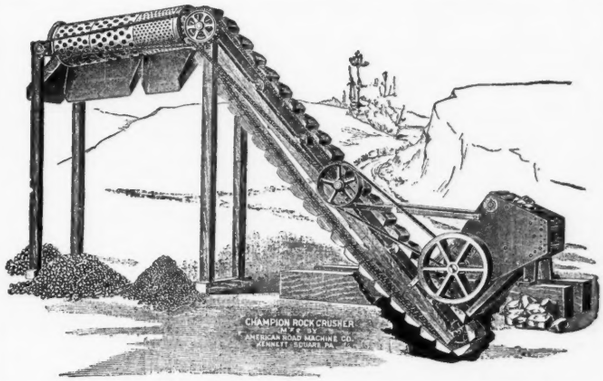

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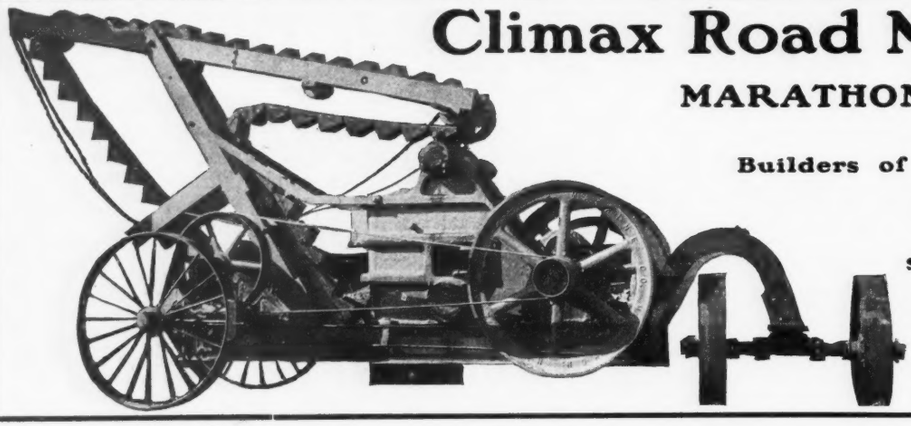

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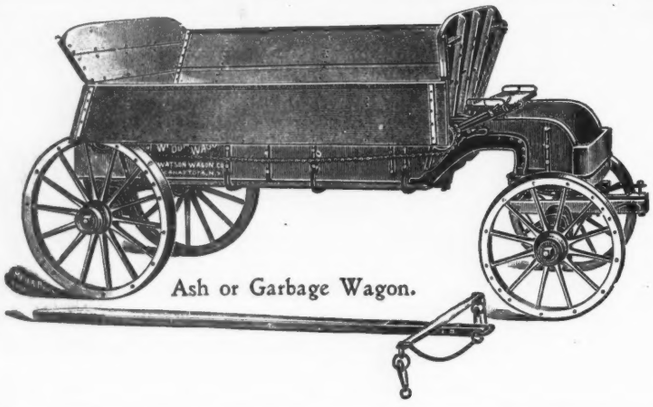

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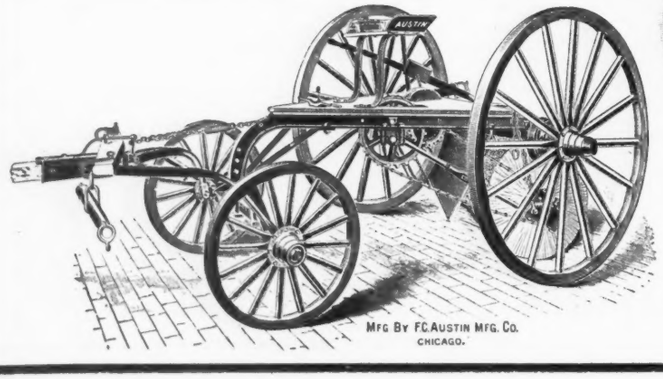

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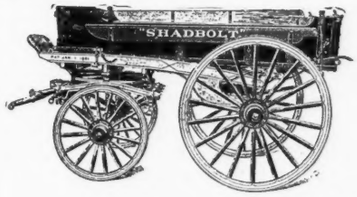

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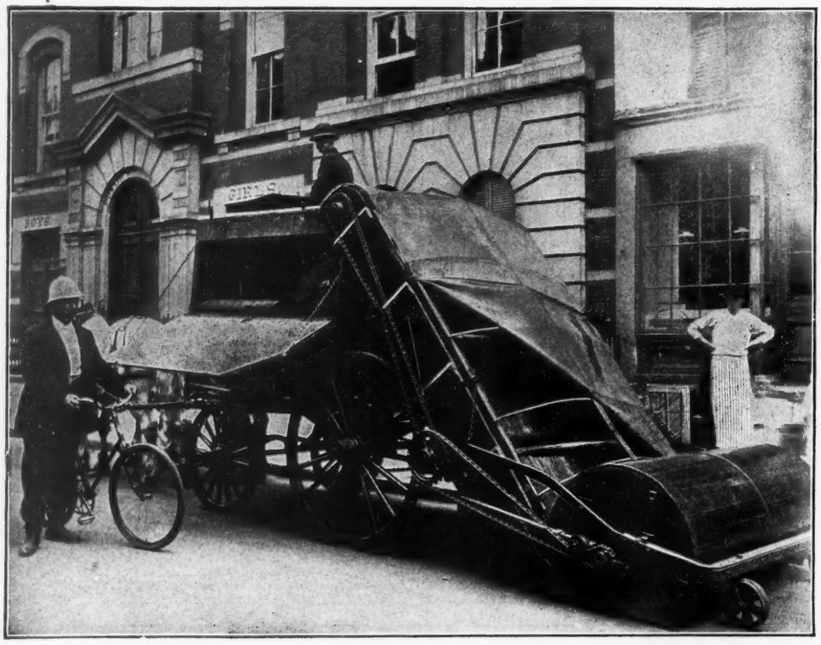

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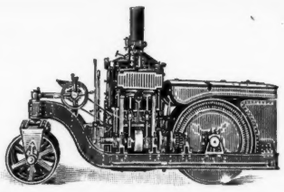

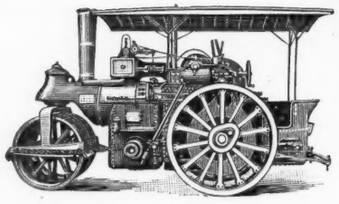

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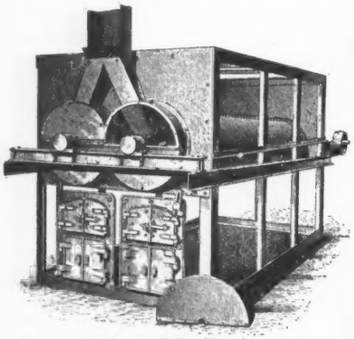

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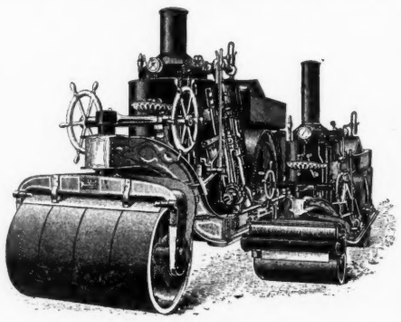

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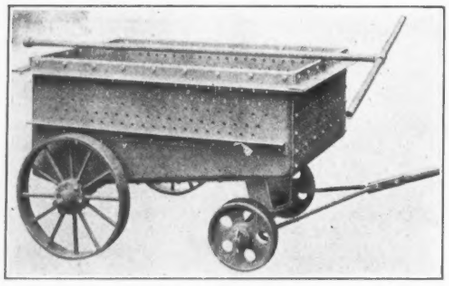

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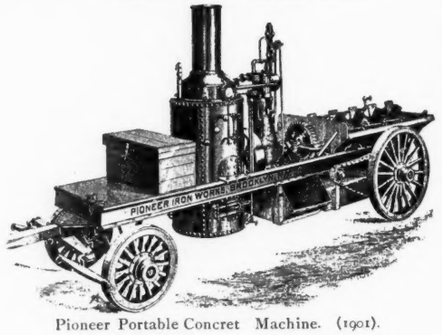

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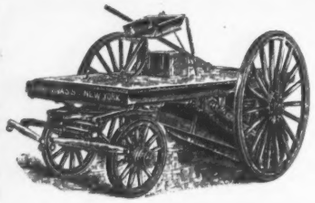

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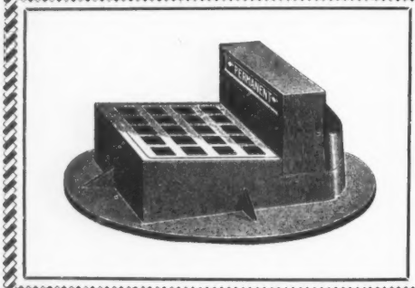

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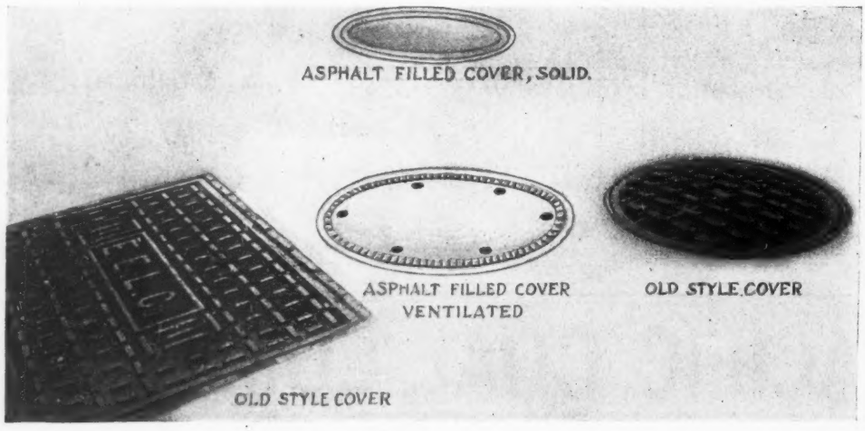

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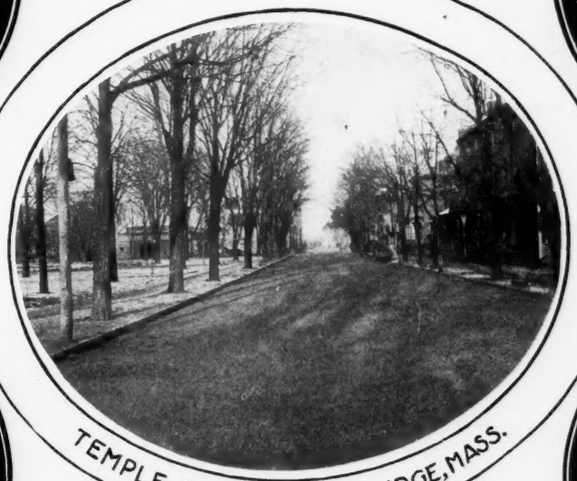

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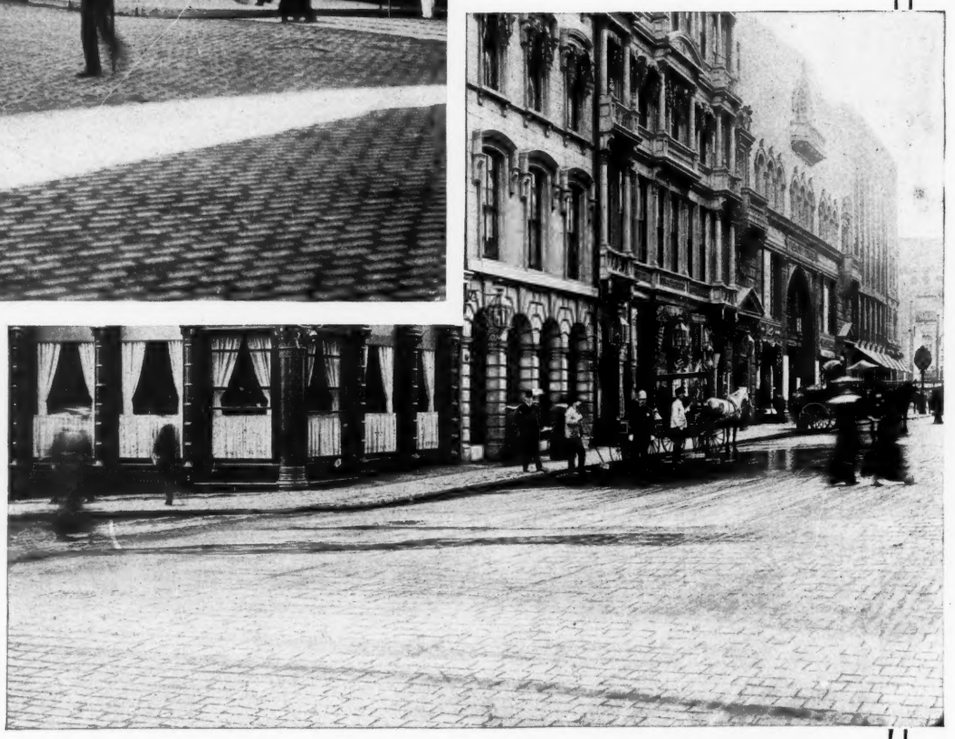

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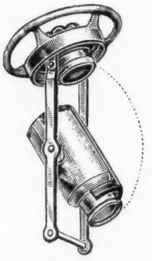

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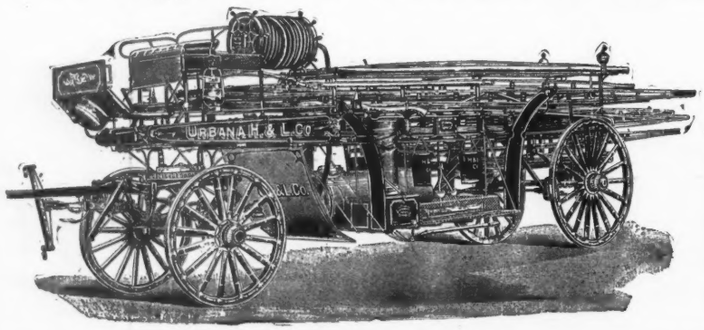

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287,967 April 18, 1899.
287,968 April 18, 1899.
666,441 January 20, 1901.
666,442 January 20, 1901.
669,711 March 12, 1901.
64,139 September 30, 1899.
64,080 September 19, 1899.
62,665 February 16, 1899.
63,167 May 29, 1899.
61,433 October 19, 1898.
62,664 February 16, 1899.
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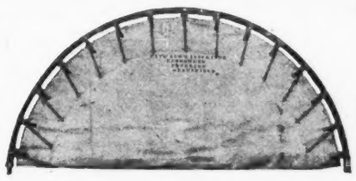

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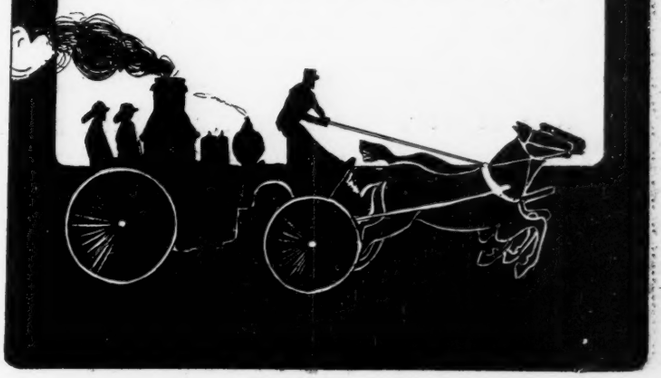

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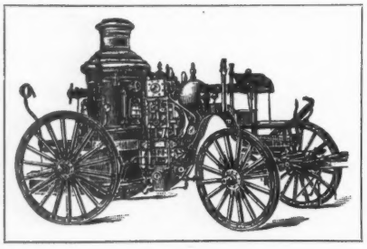

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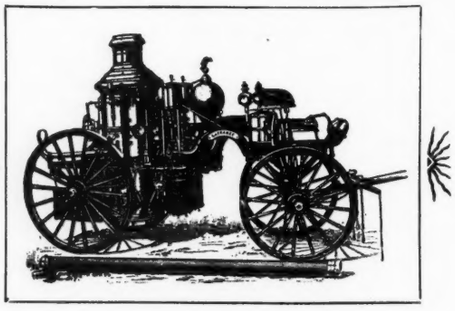

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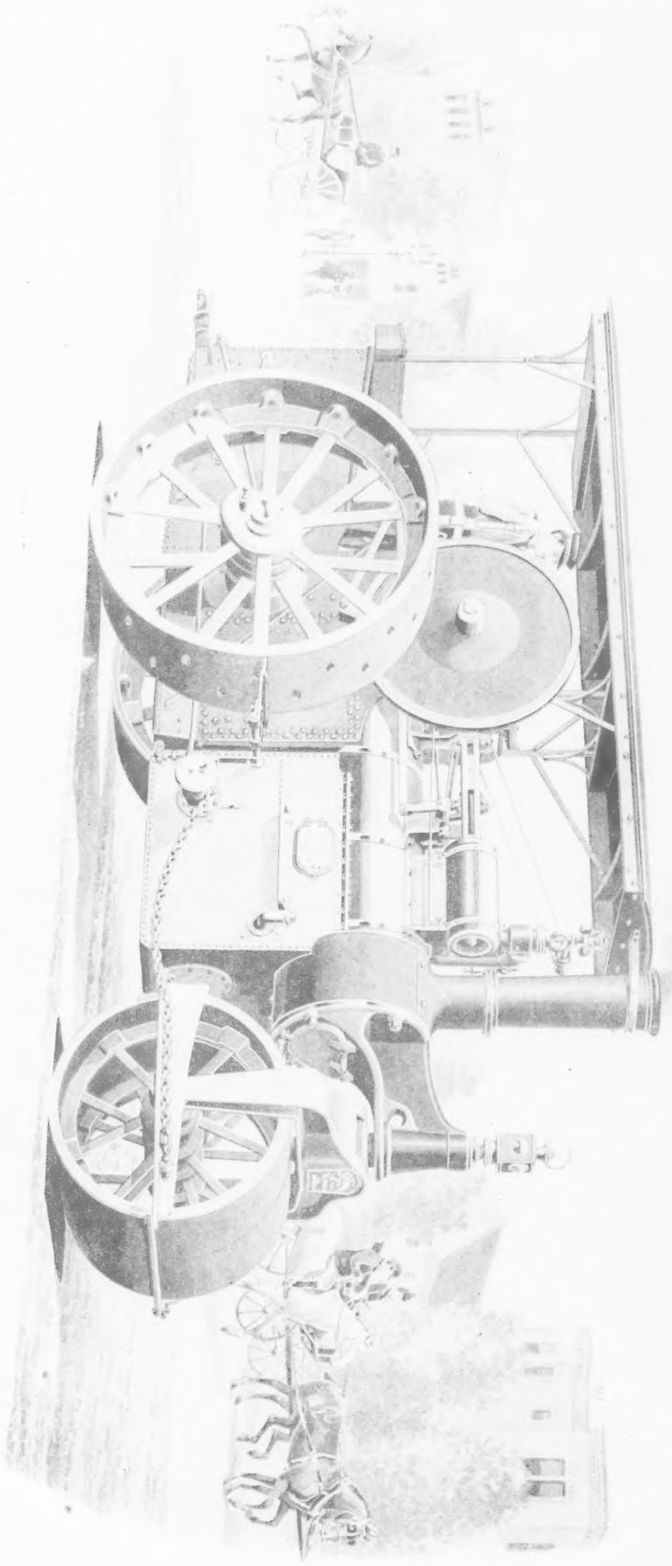

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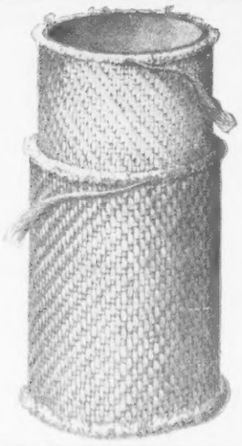

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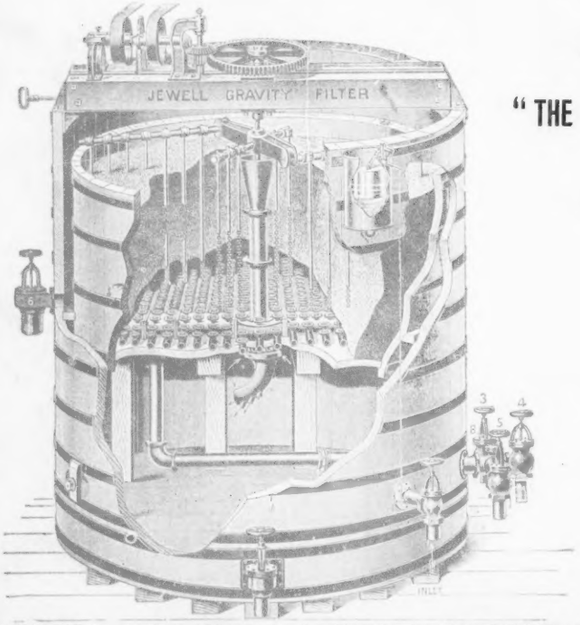

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